

## **Fishery Management Report No. 12-53**

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# **Characterization of the 2010 Salmon Run in the Kuskokwim River Based on Test Fishing at Bethel**

by

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and

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**December 2012**

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**Alaska Department of Fish and Game**

**Divisions of Sport Fish and Commercial Fisheries**



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<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	Code		alternate hypothesis	H <sub>A</sub>
gram	g	all commonly accepted	e.g., Mr., Mrs., AM, PM, etc.	base of natural logarithm	e
hectare	ha	abbreviations		catch per unit effort	CPUE
kilogram	kg			coefficient of variation	CV
kilometer	km	all commonly accepted	e.g., Dr., Ph.D., R.N., etc.	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L	professional titles		confidence interval	CI
meter	m		@	correlation coefficient	R
milliliter	mL	at		(multiple)	
millimeter	mm	compass directions:		correlation coefficient	
		east	E	(simple)	r
		north	N	covariance	cov
		south	S	degree (angular)	°
		west	W	degrees of freedom	df
		copyright	©	expected value	E
		corporate suffixes:		greater than	>
		Company	Co.	greater than or equal to	≥
		Corporation	Corp.	harvest per unit effort	HPUE
		Incorporated	Inc.	less than	<
		Limited	Ltd.	less than or equal to	≤
		District of Columbia	D.C.	logarithm (natural)	ln
		et alii (and others)	et al.	logarithm (base 10)	log
		et cetera (and so forth)	etc.	logarithm (specify base)	log <sub>2</sub> , etc.
		exempli gratia		minute (angular)	'
		(for example)	e.g.	not significant	NS
		Federal Information		null hypothesis	H <sub>0</sub>
		Code	FIC	percent	%
		id est (that is)	i.e.	probability	P
		latitude or longitude	lat. or long.	probability of a type I error	
		monetary symbols		(rejection of the null hypothesis when true)	α
		(U.S.)	\$, ¢	probability of a type II error	
		months (tables and figures): first three letters	Jan,...,Dec	(acceptance of the null hypothesis when false)	β
				second (angular)	"
				standard deviation	SD
				standard error	SE
				variance	
				population	Var
				sample	var
<b>Time and temperature</b>					
day	d				
degrees Celsius	°C				
degrees Fahrenheit	°F				
degrees kelvin	K				
hour	h				
minute	min				
second	s				
<b>Physics and chemistry</b>					
all atomic symbols					
alternating current	AC	registered trademark	®		
ampere	A	trademark	™		
calorie	cal	United States			
direct current	DC	(adjective)	U.S.		
hertz	Hz	United States of America (noun)	USA		
horsepower	hp	U.S.C.	United States Code		
hydrogen ion activity (negative log of)	pH	U.S. state	use two-letter abbreviations (e.g., AK, WA)		
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

***FISHERY MANAGEMENT REPORT NO. 12-53***

**CHARACTERIZATION OF THE 2010 SALMON RUN IN THE  
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by

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## ABSTRACT

Annual abundance indices and run timing of adult Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, chum *O. keta*, and coho *O. kisutch* salmon returning to the Kuskokwim River have been assessed by the Bethel drift gillnet test fishery since 1984. In 2010, the Bethel salmon test fishery operated from June 1 through August 24. A series of timed drifts using 5.375 in (13.6 cm) and 8.0 in (20.3 cm) stretch mesh gillnets were made at three stations across the river channel. Each series of drifts began approximately one hour following each high tide throughout the fishing season. Mean tidal catch per unit effort (CPUE) that served as an index of abundance was calculated for each species. The cumulative mean tidal CPUE was compared to information from earlier years and to the results from the Lower Kuskokwim inseason subsistence salmon harvest monitoring project to determine salmon abundance and run timing to help direct subsistence and commercial management decisions. The final cumulative CPUE index through August 24 was: Chinook salmon 461, sockeye 1,374, chum 7,651, and coho salmon 2,024. Relative abundance indices were below the 2000–2009 averages for Chinook, sockeye and coho salmon while chum salmon was near average. Run timing of Chinook salmon peaked a day early on June 21; sockeye salmon peaked nine days late on 7 July; chum peaked two days late on 7 July; and coho salmon were on time and peaked on August 7.

Key words: Chinook salmon *Oncorhynchus tshawytscha*, sockeye salmon *O. nerka*, chum salmon *O. gorbuscha*, coho salmon *O. kisutch*, Kuskokwim River, Bethel salmon test fishery, run timing, relative abundance, commercial fishery, subsistence fishery, stocks of concern, escapement, drift gillnet, index, water level, ASL composition

## INTRODUCTION

The Kuskokwim River salmon fisheries are managed according to the *Kuskokwim River Salmon Management Rebuilding Plan* (5 AAC 07.365) adopted by the Alaska Board of Fisheries (BOF) in January 2001 (Burkey et al. 2000) and amended in January 2004 (Bergstrom and Whitmore 2004) and again in 2007 (Linderman and Bergstrom 2006). The purpose of this plan is to provide guidelines for rebuilding and management of the Kuskokwim River fishery that will result in the sustained yield of salmon stocks large enough to meet escapement goals, provide amounts reasonably necessary for subsistence, and provide for fisheries other than subsistence. The management of this salmon fishery is confounded by unknown variables such as run size and migratory timing, harvest of mixed stocks, overlapping multispecies salmon runs, allocation issues, and the immense size of the Kuskokwim River drainage. To address this management objective, managers rely on subsistence harvest reports, test fish catch per unit effort (CPUE) index summaries, commercial harvest catch rates, and, as fish begin reaching clear water tributaries, reports from weir, sonar, and aerial survey programs. This information is used to attempt to adequately characterize inseason migratory timing, run strength, and escapement of Pacific salmon *Oncorhynchus* spp. in the Kuskokwim River drainage.

Bethel test fishery (BTF) provides an inseason CPUE index that fishery managers compare to previous years' BTF CPUE indices to address inseason salmon run timing and relative abundance. Test fishery CPUE data are not used to measure escapement of adult salmon to the spawning grounds or to provide an estimate of total run abundance because of the unknown relationship between BTF, escapement, abundance, and harvest that occurs upstream and downstream of the test fishery. However, the current year test fish CPUE index can be compared to prior year indices and along with associated subsistence reports, weir, sonar, and aerial survey data, can be used to assess salmon run strength. Comparison of test fish CPUE data between years should be approached cautiously due to an array of factors affecting salmon catchability at the test fish site. Such factors include, but are not limited to, water level and clarity, height of the flooding tides, weather conditions, river channel morphology and hydrology, fish size relative to gillnet mesh size, net saturation effects, and test fish crew technique.

The location of the Bethel test fishery within the Kuskokwim River drainage is important to salmon managers by providing some of the first information on the development of salmon runs in a given year. Historically managers relied on test fisheries, commercial catch statistics, and informal reports from subsistence and sport fishermen to gauge inseason salmon run abundance. In 1987, the directed Chinook salmon *Oncorhynchus tshawytscha*, commercial fishery was discontinued in the Kuskokwim River due to conservation concerns. In the absence of a June fishery, early inseason salmon run information was limited primarily to test fish data and informal subsistence harvest reports providing managers a clearer picture of inseason salmon runs.

In 2001 a subsistence monitoring project in the Bethel area of the Kuskokwim River drainage was implemented to provide a qualitative assessment of subsistence fishing success and degree to which subsistence needs were met inseason. The catch monitoring project provides fishery managers an additional information inseason to monitor salmon abundance (fishing is good, average, or poor) and run timing (early, normal, or late) compared to previous year's inseason subsistence catches. This information in combination with the BTF index assists fishery managers in the run assessment process, as to whether abundance is adequate to provide for escapement, subsistence and commercial fishing opportunity. The catch monitoring project formally reports their findings to Alaska Department of Fish and Game (ADF&G) and the Kuskokwim River Salmon Management Working Group (Working Group) on a weekly basis (Carroll and Patton 2010).

## FISHERY DESCRIPTION

Mixed stocks of Chinook salmon, sockeye salmon *O. nerka*, chum salmon *O. keta*, and coho salmon *O. kisutch* that are returning to the Kuskokwim River are subjected to subsistence and periodic commercial fishing. As mentioned above, commercial fishing for Chinook salmon has been closed in the Kuskokwim River since 1987. Prior to 2004, the commercial fishery was directed towards chum and coho salmon. Sockeye salmon, generally less abundant, were considered incidental in the commercial harvest until 2004, when the BOF accepted a proposal for a commercial harvest guideline level of up to 50,000 sockeye salmon for the Kuskokwim River. Chinook salmon are the principal target species of subsistence fishermen; however, chum, sockeye and coho salmon also contribute significantly to the subsistence harvest. Harvests of pink salmon *O. gorbuscha* are negligible, in part, because of the lack of both commercial markets and interest by subsistence fishermen.

## Commercial Fishery

Commercial salmon harvests in the Kuskokwim River have occurred in two districts (Figure 1). District W-1, the lower Kuskokwim, is 220 km (137 mi) in length and extends from the mouth of the river to Bogus Creek. District W-1 is divided into two subdistricts (W-1A and W-1B) and into four statistical areas (335-11, 335-12, 335-13 and 335-14), which partition the district into segments of approximately equal length (Figure 2). Prior to 1990, District W-1 was divided into three statistical areas (335-11, 335-12 and 335-13). In 1990, the statistical area farthest downstream (335-11) was divided in half. The numbering of all four statistical areas was then reordered to 335-11 and 335-12 (formerly 335-11), 335-13 (formerly 335-12) and 335-14 (formerly 335-13). Furthermore, in 2000, District W-1 was divided into two subdistricts. Subdistrict W-1A consists of that portion of District W-1 upstream from a line between regulatory markers located at the downstream end of Steamboat Slough near Bethel. Subdistrict

W-1B consists of that portion of District W-1 downstream from the Steamboat Slough regulatory markers. District W-2, the middle Kuskokwim, is 80 km (50 mi) in length and extends from approximately 12 km (7.5 mi) downstream of the community of Lower Kalskag to the community of Chuathbaluk. District W-2 consists of one statistical area (335-20). Districts W-1 and W-2 are separated by a section of river approximately 61 km (37 mi) in length that is closed to commercial salmon fishing. All waters upstream of District W-2 are closed to commercial salmon fishing. Kuskokwim area commercial fishermen may fish in any district in the management area, including Districts W-4 and W-5.

Drift gillnets are the principal commercial gear type used in the Kuskokwim River, although set gillnets are also legal. The mesh size used in the fishery is restricted to 6.0 in (15.2 cm) or smaller with net depth being no more than 45 meshes (6 m) deep. This mesh restriction has been in effect since 1985 in an attempt to improve declining Chinook salmon escapements. The most common mesh sizes used range from 5.25 in (13.3 cm) to 6.0 in (Molyneaux 2003).

Operated in District W-1, Bethel test fish provides daily inseason assessment of Kuskokwim River salmon run strength and timing largely concurrent with the commercial fishing season. Comparison of current year Bethel test fish CPUE with previous years, and in conjunction with commercial catch statistics, anecdotal subsistence catch reports, and escapement projects, helps managers determine if run strength is adequate for commercial fishing.

### **Subsistence Fishery**

The subsistence salmon fishery in the Kuskokwim region is one of the largest and most important in the state and supports one of the largest subsistence salmon fisheries in North America. There are 38 communities consisting of approximately 4,700 households in the Kuskokwim Area. The majority (79%) of Kuskokwim area households are situated within the Kuskokwim River drainage. Bethel is the largest community in the region, consisting of approximately 1,980 households. In 2009, the postseason survey conducted by ADF&G Division of Commercial Fisheries estimated that residents of Bethel accounted for 30% of the Kuskokwim Area subsistence harvests. It was also estimated that of the total Kuskokwim River subsistence harvest 82% (84,800) Chinook, 78% (55,570) chum, 71% (45,560) sockeye, and 74% (38,890) coho salmon were harvested by residents of lower Kuskokwim River communities (Carroll and Hamazaki 2012).

The Rebuilding Plan provided direction for establishing a subsistence fishing schedule which allows subsistence fishing with gillnets and fish wheels for four consecutive days per week during June and July. The schedule is implemented in a stepwise progression up the river consistent with salmon run timing. The schedule can be altered inseason based on run strength to achieve escapement goals (Bavilla et al. 2010). Furthermore, subsistence-fishing closures are scheduled by emergency order prior to, during, and after commercial fishing periods to ensure salmon harvested during open subsistence periods do not reach the commercial market. The type of gear used by subsistence fishermen in the lower river is generally similar to the gear used for commercial fishing. However, set gillnets are prevalent in the subsistence fishery and there are no restrictions on mesh size. Set and drift gillnets with a 6.0 in maximum stretched mesh size that are used for subsistence purposes are restricted to be no more than 45 meshes deep. Similarly, gillnets with stretched mesh size greater than 6.0 in can be no deeper than 35 meshes. In June, many subsistence fishermen use mesh sizes of 8.0 to 8.5 in (20 to 22 cm) stretched mesh to target Chinook salmon (Francisco et al. 1995; Martz and Whitmore 2005).

## PROJECT BACKGROUND

From 1966 through 1983, ADF&G conducted a set gillnet test fishery in the lower portion of the Kuskokwim River near an abandoned fish camp called Kwegooyuk (Huttunen 1984). At that site, the river was approximately 5 to 7 km (3 to 4 mi) wide and had two major channels, one channel along the east shore and one along the west shore. The river channels were separated by soft sandy shoals that were mostly flooded at high tide. It was also difficult to predict which side, east shore or west shore, would be the “main” river channel in a given year and it appears this may have alternated several times during the history of the Kwegooyuk test fishery project (Huttunen 1984). In that expansive body of water, the Kwegooyuk test fishery gillnets, 27 fathoms (49 m) in length, were set from the east shore just upstream of the lower boundary of District W-1 and fished 24 hours a day (Molyneaux 2003).

The goals of the Kwegooyuk test fishery were to describe run timing and provide an index of abundance for Chinook, sockeye, and chum salmon, similar to the present day Bethel test fishery. Managers believed that run timing was adequately described by the Kwegooyuk test fishery, but the project did not provide a satisfactory index of run abundance. This problem was attributed to fluctuations in the migratory route of salmon between the east and west river channels as influenced inseason by changes in weather patterns and tidal stages, and between seasons by alterations in river channel morphology (Huttunen 1984). The Kwegooyuk test fishery was also a poor predictor of Chinook and chum salmon catches in the District W-1 (Huttunen 1984). Due to the remoteness of the test fish site, daily catches of fish were not able to be sold or distributed to the public for subsistence uses. This made discarding of the daily catches difficult or impossible, resulting in unavoidable waste that was not acceptable to ADF&G, local residents, and the industry (Molyneaux 2003).

In an effort to provide a more reliable index of relative abundance and run strength, and to provide a better avenue for the sale of test fish catches, a drift gillnet test fishery program near Bethel was evaluated in July 1983 (Huttunen 1984). This program ran concurrently with the Kwegooyuk test fishery. The focus was on the use of drift gillnets in a narrower river channel of the mainstem Kuskokwim River near Bethel. The objectives of the 1983 drift gillnet test fishery were to assess the feasibility of collecting run timing and abundance information for coho salmon (Huttunen 1984). The new site was in the mainstem Kuskokwim River about 5 km (3 mi) upstream from Bethel, just above the boundary line separating subdistricts W-1A and W-1B. The river was approximately 1 km (0.5 mi) wide at the new location and had a single major channel that allowed drift gillnets to collect CPUE information at selected stations across the entire channel width. Four small channels circumvent the site (Steamboat, Straight, Church, and Napaskiak sloughs), but their influence on the test fishery was assumed negligible. The new test fish site was also conveniently located in close proximity to local fish processors for the timely distribution and sale of daily catches. Conclusions from the 1983 program evaluation were that the drift gillnet test fishery at Bethel was viable and offered a more reliable means of monitoring salmon run timing and abundance than the Kwegooyuk test fishery. The Kwegooyuk set gillnet program was then discontinued after 1983 and replaced with a multiple-mesh drift gillnet project referred to as the Bethel test fishery (Huttunen 1984).

Operating at a point upriver of most commercial and subsistence harvest meant that instead of indexing total run abundance, the objective of the Bethel test fishery is to provide an index of abundance for salmon at a point midway in the commercial fishing district. This distinction is

important because downriver commercial and subsistence harvests are not accounted for in the Bethel test fishery index. The variability in the annual exploitation rates of the subsistence and commercial fishery are affected by many factors, including management actions, changes in gear efficiency, regulations designed to alter harvest efficiency, variability in fishing patterns (length of openings and frequency of openings), changes in water level, river entry patterns of salmon, and the occurrence of fishermen strikes. Therefore it is only appropriate to use Bethel test fish CPUE as an indicator of salmon abundance at Bethel when compared to CPUE information from previous years to determine relative salmon abundance and run timing to help direct subsistence and commercial fishery management decisions.

## OBJECTIVES

1. Determine a daily mean index expressed as CPUE and a cumulative daily mean CPUE index for Chinook, sockeye, chum, and coho salmon at the Bethel test fish site from June 1 through August 24.
2. Estimate relative run abundance and timing of Chinook, sockeye, chum and coho salmon at the Bethel test fish site by comparison of historical test fish information.

## METHODS

### FIELD OPERATIONS

The methods and location used in the 2010 Bethel test fishery were similar to those used since 1984 (Huttunen 1985; Molyneaux 1991; Molyneaux 1994; Molyneaux 2003; Bue and Martz 2006). Following each high tide, a series of gillnet drifts were conducted by the test fish crew in the Kuskokwim River approximately 5 km (3 mi) upstream of Bethel, where Straight Slough diverges from the main river channel (Figure 3). A three-person crew performed drifts using a 20 ft (6.1 m) skiff and two 50 fathom (90 m) drift gillnets, one each consisting of 20.3 mm (8.0 in) and 13.7 mm (5.375 in) mesh. Each series of drifts began approximately one hour after the published high slack tide (i.e., high tide) for Bethel to ensure all drifts were conducted in water flowing downstream. If the weather conditions and high tide magnitude caused a delay in the ebbing of the tide, the time that the drifts began was delayed. Two drift series were completed daily across the width of the main channel (Figure 3). For each drift series, one of six unique permutations from a repeating fishing schedule was used to determine which mesh size would be fished at each station (Table 1). This meant that no station was fished with the same mesh size twice during a single drift series. However, this design dictated that one station was fished twice each drift series; first with the 8.0 in gear and then with the 5.375 in gear. The two remaining stations were fished only once; one station with the 8.0 in gear and the other station with the 5.375 in gear. The station fished and the station missed by a given mesh size varied with the fishing schedule. This discontinuity was the result of time and fiscal restraints but was consistent with past years. The duration of each drift was approximately 20 minutes and the mean fishing time was calculated as half the time it took to deploy and retrieve the gillnet, plus the time the gillnet was fully deployed. The river distance traversed by each drift varied depending on water and channel conditions, but the distance was generally less than 3 km (2 mi). To avoid conflicting with commercial fishermen, the test fishery did not operate when commercial fishing was in progress in Subdistrict W-1A.

The river channel is typically 12 m (36 ft) deep and 320 m (1,050 ft) wide as measured near the downriver end of the test fish site (Figure 4). Gillnets used in the test fishery generally sampled the upper half of the water column; however, at station one the inshore end of the gillnet dragged along a section of sand bar. At station three the crew deployed the inshore end of the gillnet approximately 8 m (24 ft) offshore to avoid snags along the channel edge. As the station three drift progressed, it typically moved towards the center of the channel and overlapped with station two.

Drifting began on the second tide on June 1 and continued through the second tide on August 24. Through the second tide on July 10, two different mesh sizes were used in the test fishery; the first two drifts of the drift series were conducted with the 8.0 in mesh gillnet, and the second two drifts were performed with the 5.375 in mesh gillnet. Different mesh sizes were used because the larger mesh catches larger Chinook salmon, whereas the smaller mesh is more effective on smaller Chinook and other salmon species. Beginning July 11 the use of the 8.0 in mesh gear was discontinued for the remainder of the season because, typically, by mid-July the Chinook salmon migration in the lower Kuskokwim River is essentially over.

Until 1990, four drifts continued to be conducted at the three stations after mid-July using only the 5.375 in mesh gillnet. The fishing schedule was used to determine the drift sequence as well as the station that received the duplicate drift. Results of the duplicated drifts were then averaged. However, Molyneaux (1991) found the duplicated fourth drift was unnecessary and it was discontinued beginning in 1990. Prior to 2001 the test fishery had an outlet for the disposal of the catch through sales to local processors. Beginning in 2001, because of continuing poor Chinook and chum salmon returns, a reduction of commercial fishing during June and July, and a decline in the salmon market, sales to local processors became sporadic. The disposal of test fish caught salmon became an increasing problem. In 2003, inseason adjustments to the standard operating procedures were made as to when the use of the 8.0 in mesh gear was discontinued for the remainder of the season. The change in procedures became necessary due to a trend of increasing Chinook and chum salmon abundance and the inability to sell chum salmon to local processors or distribute them to subsistence users or local charities. Additional procedural adjustments were made in the use of the 5.375 in mesh gillnet by fishing only two of the three stations per tide during the period of high chum salmon abundance. This procedure was a change from pre-2003 years when the use of the 5.375 in gear was increased to fishing all three stations. Further adjustments to the fishing schedule have been made in recent years by discontinuing operations for a period of consecutive tides to address the chum salmon catch disposal problem.

In 2010, the use of the 5.375 in mesh gillnet was reduced to fishing only two of the three stations beginning on July 11 and continued through July 18 (Appendix B1). The stations fished and the station missed during a given tide varied with the fishing schedule. Although a procedural change, the reduction in fishing time was consistent with the June 1 to July 10 period when only catches in the 5.375 in mesh gillnets were used to calculate mean high tidal CPUEs for sockeye, chum, and coho salmon.

The 8.0 in and 5.375 in mesh gillnets were 35 meshes (6.7 m) and 45 meshes (5.8 m) in depth. The webbing was manufactured by Momoi Fishing Net MFG. Co., LTD.<sup>1</sup> and both nets were hung at a 2:1 ratio to a finished length of 50 fathoms (90 m). The 8.0 in mesh webbing was MT-

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<sup>1</sup> Product names used in this report are included for scientific completeness, but do not constitute a product endorsement.

83, a multi-fiber mono twist 1.5 X 16 strand twine, and the color code was R-46R (medium brown/green). The 5.375 in webbing was MST-33, a multi-fiber mono super twist 1.5 X 8 strand twine, and the color code was SH-3 (light green).

The catch for each drift was tallied by species and by station. At the end of each series of drifts, the catch was either donated to charities or individuals desiring the fish for subsistence purposes. The data were entered into a Microsoft Excel™ computer program for analysis and recorded in the office log.

## TEST FISHING INDEX

The actual salmon catch for each drift was converted to CPUE to enhance the comparability of catch results. This was accomplished by converting the number of fish caught in the variable net length and mean fishing time of each drift to the number of fish that would be caught by 100 fathoms (180 m) of net fished for 60 minutes. This standardization of net length and fishing time has been used in many gillnet test fisheries conducted by ADF&G (Meacham 1978; Waltemeyer 1983). Each drift CPUE ( $I$ ) was computed as:

$$I = (100 \text{ fathoms})(60 \text{ minutes}) C (L T)^{-1}, \quad (1)$$

where  $C$  was the catch of each species in numbers of fish,  $L$  was the length of net used in fathoms and  $T$  was the mean fishing time in minutes.

For each high tide, the drift CPUEs were averaged over all stations to calculate a mean tidal CPUE index ( $I_i$ ) for each species:

$$I_i = n^{-1} \left( \sum_{j=1}^n I_{i,j} \right), \quad (2)$$

where  $I_{i,j}$  was the drift CPUE index from drift  $j$  on high tide  $i$ , and  $n$  was the number of drifts conducted.

For Chinook salmon the mean was calculated using the drift CPUEs from both 8.0 in and 5.375 in mesh nets with each drift and mesh size weighted equally ( $n = 4$ ). Only catches in the 5.375 in mesh nets were used to calculate mean tidal CPUEs for sockeye, chum and coho salmon ( $n = 2$ ).

If a high tide was not fished by the test fish crew, then an estimated mean high tidal CPUE was calculated using one of two methods. First, if the high tide was missed because of either a commercial fishing period or some other reason, then the estimate was assumed to be an average of the mean tidal CPUE of the high tide two tides prior to and following the missed high tide. This use of averaging was to take into account that the catch was larger for one of the two high tides each day and this large catch/small catch pattern was consistent from day to day. When a series of more than two consecutive high tides were missed, then the estimated mean high tidal CPUE for the morning tide was considered the average of the CPUE from the last AM index prior to the missed high tide and the CPUE from the first AM index after test fishing resumed. If the missed high tide was a PM tide then the CPUE from the last actual PM tide prior to and the CPUE from the first PM index after test fishing resumed was used in the estimate.

The actual and estimated mean high tidal CPUEs were summed by species throughout the season to generate a cumulative CPUE index ( $I$ ) for the whole season:

$$I = \sum_{i=1}^n I_i \quad (3)$$

where  $n$  was the total number of tides which were actually fished or for which the CPUE was estimated throughout the season.

## **WATER LEVEL COMPARISONS**

The U.S. Department of the Interior, U. S. Geological Survey (USGS) branch has collected water level information for the Kuskokwim River since 1953. The USGS collects discharge, gage height and precipitation information at a site located at the community of Crooked Creek 341 km (212 mi) upstream of Bethel (Appendix C1). Although other tributaries downstream of Crooked Creek such as, but not limited to, the Aniak, Tuluksak, Kisaralik, Kasigluk, and Kwethluk rivers contribute to the volume of water passing the Bethel test fish site, it is assumed that the measured fluctuations in water level at the Crooked Creek site generally reflect the observed trends in water levels at the Bethel test fish site. A historical year is defined to be ‘similar’ in water level to the current year when daily comparisons of Crooked Creek water level data are within +/- 2 ft. It is assumed that years with similar water levels produce similar catchability of the test fish gillnets, therefore comparable test fish CPUE indices for years with similar water levels. This comparison of water level information was used to further refine the interpretation of the test fish CPUEs to index relative salmon abundance and passage at the Bethel test fish site. Comparison data from 2000 to 2010 assumes similar river morphology at the test fish site throughout that period.

## **HYDROLOGICAL MONITORING**

Hydrological conditions were recorded during the first drift of each tide. Water surface temperature was recorded in degrees Celsius (°C) (Appendix C2); depth of water clarity was recorded in meters (m) (Appendix C3). The daily water surface temperature value recorded on the data spreadsheet was the lowest value for all high tides for that day. The daily value for depth of water clarity recorded on the data spreadsheet was the highest value for all tides for that day.

## **RESULTS**

## **OPERATIONS**

Bethel test fishery operated from June 1 through August 24, and the first salmon were caught on June 2 (Table 2). During the 85 day period, 163 high tides occurred. Four hundred ninety eight drifts caught 292 Chinook, 495 sockeye, 2,872 chum and 1,020 coho salmon (Appendix B1). Chinook, sockeye and chum salmon migrations ended before the test fishery was concluded, but catches of coho salmon persisted up to and possibly past August 24 (Table 2). Six of the days during the project operational period had only one high tide occurring during that day. One tide was missed for crew training, six tides were missed due to equipment maintenance needs, three tides were missed due to simultaneously scheduled commercial fishing periods, two tides were missed for observance of the July 4 holiday, three tides were missed because of unfavorable weather conditions, and one tide was missed due to mechanical problems (Appendix B1).

## **ABUNDANCE INDICES AND RUN TIMING**

### **Chinook Salmon**

The first Chinook salmon was caught in the Bethel test fishery on June 2. The mean peak daily high tidal CPUE index (daily index) of 39 occurred on June 16 (Table 2). Daily indices were generally below the 2000–2009 average except for an eight day period from June 15 to June 22 when the daily index fluctuated between above to below average (Figure 5, Appendix D1). The cumulative mean tidal CPUE index (cumulative index) was 461 for the season, 20% below the 10-year average of 580, and the fourth lowest cumulative index since 2000, most similar to 2002 and 2007 (Appendix D2). Based on the cumulative index, the central 50% of the run passed the test fish site between June 17 and June 29 and 50% of the passage occurred by June 21 (Table 2). The central 50% of the Chinook salmon passage at Bethel fell within the 10-year average range of dates of June 16 to June 29 and 50% of the passage occurred one day earlier than the average date of June 22 (Appendix D3).

### **Sockeye Salmon**

The first sockeye salmon was caught in the Bethel test fishery on June 12. The peak daily index of 191 occurred on July 15 (Table 2). Daily indices were generally below 2000–2009 average except for a 15 day period from July 7 to July 21 when the daily index tracked above the 10-year average (Figure 6, Appendix E1). The cumulative index was 1,374 for the season, 17% below the recent 10-year average of 1,655, the fourth lowest cumulative index since 2000, most similar to the years 2001 and 2007 (Appendix E2). Based on the cumulative index, the central 50% of the sockeye salmon run passed the test fish site between June 23 and July 15 and 50% of the passage occurred by July 7 (Table 2). The central 50% of the sockeye salmon passage at Bethel fell well outside of the 10-year average in range of dates (June 23 to July 3) and 50% of the passage occurred nine days later than the average date of June 28 (Appendix E3).

### **Chum Salmon**

The first chum salmon was caught in the Bethel test fishery on June 4. The peak daily index of 461 occurred on July 3 (Table 2). Daily indices generally tracked the 2000–2009 average (Figure 7, Appendix F1). The cumulative index was 7,651 for the season, 5% below the 10-year average of 8,063, and the fifth highest cumulative index since 2000, most similar to the years 2002 and 2009 (Appendix F2). Based on the cumulative index, the central 50% of the chum salmon run passed the test fish site between June 30 and July 14 and 50% of the passage occurred by July 7 (Table 2). The central 50% of the chum salmon passage at Bethel in 2010 mirrored the 10-year average range of dates of June 30 to July 14 but 50% of the passage occurred two days later than the average date of July 5 (Appendix F3).

### **Coho Salmon**

The first coho salmon was caught in the Bethel test fishery on July 16 and catches continued through the project completion date of August 24, however this does not encompass the entire length of the coho salmon return. The peak daily index for coho salmon of 246 was on August 10 (Table 2). Daily indices generally tracked well below the recent 10-year average (Appendix G1, Figure 8). The cumulative index was 2,024 by the project's completion date, which was 55% below the 2000–2009 average of 4,460 and the lowest cumulative index since 2000 (Appendix G2). Based on cumulative index the central 50% of the run passed the test fish site between

August 2 and August 10 and 50% of the passage occurred by August 7 (Table 2). The central 50% of the coho salmon passage at Bethel fell within the 10-year average range of dates of July 31 to August 12 date of 50% of the passage in 2010 coincided with the (year range) 10-year average date of August 7 (Appendix G3).

## **WATER LEVEL COMPARISONS**

Kuskokwim River water levels ranged from 1.0 m (3.7 ft) to 3.3 m (10.8 ft) from June 1 to August 24. From June 1 through August 24 water levels were generally within the 2000–2009 mean range for the period 2000–2009 of 3.7 and 10.1 ft (3.1 m) except for periods from June 25 to July 1 and July 10 to July 15 when levels fell below the 2000–2009 minimum average, and again from August 12 through August 19 when water levels exceeded the 2000–2009 maximum average. Daily water level measurements were within a +/-2 ft (0.6 m) range difference of the mean range for a 10 day period from June 13 to June 22 and again for a 34 day period from June 29 through August 1 (Figure 9, Appendix C1).

## **HYDROLOGICAL MONITORING**

Surface water temperature and water clarity measurements were recorded during each high tide fished from June 1 through August 24. Water temperatures ranged from 9° to 16°C with an average temperature of 13°C (Appendix C2, Figure 10). The average daily water clarity was 0.5 m and ranged from 0.1 to 1.2 m (Appendix C3, Figure 11).

## **DISCUSSION**

### **ABUNDANCE INDEX**

In 2010 the Bethel test fishery CPUE index, in conjunction with inseason subsistence fishing reports, was the primary information used by managers to assess early season abundance of salmon entering the Kuskokwim River.

#### **Chinook Salmon**

CPUE of Chinook salmon at Bethel was measured inseason by comparing the 2010 cumulative mean tidal CPUE with the cumulative CPUE indices for those years from 2000 to 2009 with similar water levels (2000, 2007, and 2009). From June 1 to July 1 the cumulative CPUE for Chinook salmon tracked below 2009, when a majority of escapement goals were met in the middle and upper tributaries, but were not met in lower Kuskokwim River tributaries (Bavilla et al. 2010). Cumulative CPUE in 2010 tracked above 2007 when escapement was met drainagewide (Estensen et al. 2009) and above 2000, a year when Chinook salmon escapement was not drainagewide (Burkey et al. 2001). From July 2 through the remainder of the Chinook salmon passage at Bethel, the cumulative CPUE fell below 2007 and remained above 2000 (Figure 12, Appendix D2). Inseason evaluation of the 2010 cumulative index suggested Chinook salmon abundance was low but above recent years when escapements were not met.

Inseason interviews of subsistence fishermen in the 2010 catch monitoring project supported the inseason interpretation of the Bethel test fishery Chinook salmon cumulative CPUE. For the project reporting dates of June 13, June 20, and June 27 the majority of the subsistence fishermen, 50%, 65%, and 73% respectively, reported Chinook salmon fishing as “Normal” (Table 3). Based on the Bethel test fish cumulative indices for years 2000 to 2009, on average, 70% of the Chinook salmon run has passed Bethel by June 27 (Appendix D3). The catch

monitoring project data correlated with the test fish cumulative index in support of allowing a commercial chum and sockeye salmon directed fishery in District W-1 on June 28 and anticipating minimal harvest of Chinook salmon. For the project reporting dates of July 4 and July 11 the majority of the interviewed fishermen, 69% and 91% respectively, continued to support the assessment of the Bethel test fishery and the perception that the Chinook salmon subsistence fishing at Bethel was “Normal.”

Postseason evaluation of the Bethel test fish project indicated the cumulative CPUE for Chinook salmon, when compared to years with similar water level, did not work well as an inseason indicator of abundance at Bethel. Although the cumulative CPUE indicated Chinook salmon abundance was within the range necessary to achieve escapement goals, the Kuskokwim River aerial survey and ground based escapement assessment projects (escapement projects) confirmed that Chinook salmon escapement fell short of established sustainable escapement goal (SEG) ranges drainagewide (Appendix H1).

Listed below are some factors that may have affected the ability of the Bethel test fish indices to work as an inseason indicator of Chinook salmon abundance in 2010.

- Net Selectivity
  - Change in 5.375 in web in 2002 from webbing manufactured by Nagura Net Company, made of 225d #18 twine, and the color code NG45 (light green) to webbing manufactured by Momoi Fishing Net MFG. Co., LTD., made of MST-33, a multi-fiber mono super twist 1.5 X 8 strand twine, and color code SH-3 (light green).
  - Change in 8.0 in web in 2003 from webbing manufactured by Nagura Net Company, made of 225d #24 twine, and the color code was NG80 (light green) to webbing manufactured by Momoi Fishing Net MFG. Co., LTD., made of MT-83, a multi-fiber mono twist 1.5 X 16 strand twine, and color code R-46R (medium brown/green).
  - Donaldson’s Net Company, Anchorage, hung nets to 2005.
  - Nets hung by ADF&G staff in 2006 and 2007 as a cost saving measure.
  - Henry Kohl, Bethel, hanging nets from 2008 to present.
  - Reimer (2004) found in a lower Kenai River, inriver gillnet study, that the proportion of Chinook salmon caught in multi-fiber mesh increased by a factor of 2 to 4 for the early run and by a factor of 5 to 8 in the late run over the previously used cable-lay nylon nets. Reimer concluded that the increase in the cumulative CPUE of Chinook salmon in his study was most significantly affected by the change of mesh type and web color.
  - Ken Harper’s<sup>2</sup> analysis of change in Chinook salmon CPUE for the years 2000 to 2010.
  - Kevin Schaberg’s<sup>3</sup> analysis of change in Chinook salmon CPUE for the years 2000 to 2010.
- Change in river channel morphology and hydrology

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<sup>2</sup> Contact Ken Harper, Fisheries Biologist, United States Fish and Wildlife Services, Kenai Fisheries Resource Office.

<sup>3</sup> Contact Kevin Schaberg Commercial Fisheries Biologist, Alaska Department of Fish and Game, Anchorage.

- Straight Slough increased in width and depth, suggesting diversion of water flow through the test fish site, resulting in less volume of water and possible shallowing of drift site.
- Development of a new channel mouth to Church Slough along the east bank of the test fish site required an annual shift downstream in net deployment at station 1 below an area of slack water that has developed.
- Extension of sandbar at original mouth of Church Slough.

## **Sockeye Salmon**

Inseason assessment of sockeye salmon at Bethel, as indicated by the cumulative CPUE from the Bethel test fishery, suggested run abundance to be poor to average when compared to recent years with similar water levels (2000, 2002, 2007, 2009). Prior to 2010 there were no formal sockeye salmon escapement goals defined for the Kuskokwim River tributaries. Sockeye salmon abundance at Bethel was evaluated by comparing the current year's test fish cumulative CPUE to cumulative CPUEs for those years with known escapement performance as documented by Kuskokwim River escapement projects. In 2010 a sockeye salmon SEG range of 4,400 to 17,000 fish was established at the Kogrukuk River weir (Bavilla et al. 2010). From June 1 to June 22 the cumulative CPUE for sockeye salmon tracked above 2000 and below 2002, both were years of low abundance drainagewide. During the same time period, June 1 to June 22, sockeye salmon CPUE also tracked above 2007 and 2009, years when drainagewide abundance was considered average. The cumulative CPUE from June 23 to July 31 continued to be above 2002, but below all other comparable years suggesting that sockeye salmon abundance drainagewide was below average. (Figure 13, Appendix E2).

2010 catch monitoring project inseason interviews of subsistence fishermen supported the inseason interpretation of the Bethel test fishery sockeye salmon cumulative index. For the project reporting dates of June 20, June 27, and July 4 the majority of the subsistence fishermen, 96%, 81%, and 69% respectively, reported sockeye salmon fishing as "Normal." By July 11, 55% of interviewed fishermen reported sockeye salmon fishing as "Normal," 18% reported fishing as "Very Good," and 18% reported fishing as "Poor" (Table 3). The increase in the response of "Very Good" reflected the increase in the test fish cumulative index between July 14 and July 20.

Postseason evaluation of the Bethel test fish project suggests the cumulative index for sockeye salmon, when compared to years with similar water level, worked well as an inseason indicator of abundance at Bethel. The later than normal run timing of sockeye salmon at Bethel as reported by the catch monitoring project was reflective of the late run timing as indicated by the percent passage of sockeye salmon in the test fishery based on the cumulative index (Table 3, Appendix E3). Although the 2010 sockeye salmon cumulative index of 1,374 was the fourth lowest since 2000, it proved to be indicative of abundance greater than the poor return years of 2000 and 2002, and large enough to fall into the Kogrukuk River SEG escapement goal range as documented by the 2010 escapement projects (Appendix E2, Appendix H2).

## **Chum Salmon**

Inseason assessment of chum salmon relative abundance at Bethel, as indicated by the cumulative indices from the Bethel test fishery, suggested run abundance to be average when compared to recent years with similar water levels (2000, 2002, 2007, 2009). Throughout the

season the chum salmon cumulative indices tracked closely with 2002 and 2009, both years when the upper limits of the SEG goal ranges for Aniak River sonar and Kogruklu River weir were nearly reached or exceeded. The 2010 chum salmon cumulative indices tracked well below 2007, a year when the upper range of the SEG goals for Aniak River sonar and Kogruklu River weir were exceeded, and tracked well above 2000, a year when chum salmon escapements were not achieved at Aniak River sonar or Kogruklu River weir and escapements were low drainagewide (Burkey 2000; Figure 14, Appendix H3).

The 2010 catch monitoring project inseason interviews of subsistence fishermen supported the inseason interpretation of the Bethel test fishery chum salmon cumulative index. Throughout the project's reporting dates the majority of subsistence fishermen interviewed reported chum salmon fishing as "Normal" (Table 3).

Postseason evaluation of the Bethel test fish project suggests the cumulative index for chum salmon worked well as an inseason indicator of abundance at Bethel. The 2010 chum salmon escapement counts at the Kuskokwim River escapement projects confirmed that the Bethel test fish cumulative index for chum salmon was indicative of years when the SEG goals for Aniak River sonar and Kogruklu River weir were met, and within a range of below average to above average escapements drainagewide (Appendix H3).

## Coho Salmon

Inseason assessment of coho salmon relative abundance at Bethel, as indicated by the Bethel test fishery cumulative indices, suggested run abundance was below average when compared to recent years with similar water levels (2001, 2003, and 2007). From July 16 to August 7 the cumulative index for coho salmon tracked closely to 2001, and well below 2003 and 2007, all years when the Kogruklu River weir SEG range was met. In general, escapements ranged from above to below the most recent 10-year average at other Kuskokwim River escapement projects (Figure 15, Appendix H4). From August 8 to August 24 the cumulative indices tracked below all comparable years, continuing to support the indication that coho salmon abundance was in the lower historical range drainagewide. Based on the coho salmon cumulative index and the below average performance of the commercial coho salmon fishery, the Kuskokwim River was closed to commercial salmon fishing on August 12 (Brazil et al. 2011).

Postseason evaluation of the Bethel test fish project suggests the cumulative index for coho salmon worked well as an inseason indicator of abundance at Bethel. The 2010 coho salmon escapement counts at the Kuskokwim River ground based escapement assessment projects confirmed that the Bethel test fish cumulative index for coho salmon was indicative of low abundance and below average escapements drainagewide (Appendix G4).

## CONCLUSION

Kuskokwim River subsistence and commercial fishery salmon managers have found the Bethel test fishery project to be successful at indexing the relative abundance and migratory timing of salmon runs. Fishery managers require timely inseason assessment of salmon run abundance. Due to the distance between areas of harvest and escapement project locations throughout the Kuskokwim drainage, escapement projects provided limited usefulness early in the salmon runs. As the runs progress, a relationship may be seen between inseason CPUE information and escapement project information. In the absence of June commercial catch statistics, the early season indicators are limited to test fisheries and reports (both formal and informal) from

subsistence fishermen. In 2010, the catch monitoring project interviews provided information that was timely and comparable to the inseason development of salmon run abundance indices seen in the Bethel test fishery. However, postseason evaluation of both the Bethel test fish project and the catch monitoring project when compared to 2010 Chinook salmon escapement data indicated that neither project provided fisheries managers with the information to effectively manage the fishery.

Recommendations regarding the interpretation of interannual comparison of Bethel test fishery information in future reports:

- Develop a relationship between Bethel test fish CPUE and escapement at weir projects to use as an inseason assessment tool for managing the Kuskokwim River Chinook salmon fishery and annually evaluate this relationship through regression analysis.
- Compare information from years with similar water level conditions to reduce the confounding influence these variables have on catchability.
- Try to make comparisons of CPUE to the most recent 10 years to avoid the influence of changing river channel morphology.
- Consider the magnitude of fish removal and harvest effort downstream of the Bethel test fish site as they may influence interpretation of the cumulative test fish CPUE indices of relative abundance and run timing.
- Consider the magnitude of fish removal and harvest effort upstream of the Bethel test fish site as they may influence interpretation of the adequacy of the cumulative test fish CPUE indices and comparison with escapement information.
- Consider gillnet selectivity as certain age classes may be under or over represented in the Bethel test fish catch. Annual variation in age, sex, and length composition within and between years may affect the comparability of cumulative CPUE values. Maintain the inseason subsistence harvest monitoring program to utilize as a comparison of run timing and run strength with that described by the Bethel test fish project.

As one of the salmon stock assessment programs for the Kuskokwim River, the Bethel test fishery has evolved into the primary inseason salmon management tool. Consistency in methods, completeness of a historical database, frequency of operation, and timeliness of results contribute to the success of this program. The test fishery by itself is an imperfect tool. It requires a measure of subjectivity by experienced staff to interpret the information effectively. When used in conjunction with other inseason assessment tools, the test fishery can provide managers with insight into salmon run abundance and migratory timing on the Kuskokwim River.

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## REFERENCES CITED

- Bavilla, J., D. Bue, H. Carroll, T. Elison, D. Taylor, J. Estensen, and C. Brazil. 2010. 2009 Kuskokwim area management report. Alaska Department of Fish and Game, Fishery Management Report No. 10-56, Anchorage.
- Bergstrom, D. J., and C. Whitmore. 2004. Kuskokwim River Chinook and chum salmon stock status and action plan. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A04-02, Anchorage.
- Brazil, C., D. Bue, H. Carroll, and T. Elison. 2011. 2010 Kuskokwim area management report. Alaska Department of Fish and Game, Fishery Management Report No. 11-67, Anchorage.
- Bue, D. G., and M. Martz. 2006. Characterization of the 2004 salmon run in the Kuskokwim River based on test fishing at Bethel. Alaska Department of Fish and Game, Fishery Data Series No. 06-37, Anchorage.
- Burkey, C., Jr., M. Coffing, D. B. Molyneaux, and P. Salomone. 2000. Kuskokwim River chum salmon stock status and development of management/action plan options. Alaska Department of Fish and Game, Division of Commercial Fisheries Regional Information Report 3A00-41, Anchorage.
- Burkey, C., Jr., M. Coffing, J. Menard, D. B. Molyneaux, P. Salomone, and C. Utermohle. 2001 Annual management report for the subsistence and commercial fisheries of the Kuskokwim Area, 2000. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A01-34, Anchorage.
- Carroll, H. C., and E. Patton. 2010. Lower Kuskokwim River inseason subsistence salmon catch monitoring, 2008. Alaska Department of Fish and Game, Fishery Management Report No. 10-09, Anchorage.
- Carroll, H. C., and T. Hamazaki. 2012. Subsistence salmon harvests in the Kuskokwim area, 2008 and 2009. Alaska Department of Fish and Game, Fishery Data Series No. 12-35, Anchorage.
- Estensen, J. L., D. B. Molyneaux, and D. J. Bergstrom. 2009. Kuskokwim River salmon stock status and Kuskokwim area fisheries, 2009: a report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Special Publication No. 09-21, Anchorage.
- Francisco, R. K., C. A. Anderson, C. B. Jr., M. Fogarty, D. B. Molyneaux, C. Utermohle, and K. Vaught. 1995. Annual management report for the subsistence and commercial fisheries of the Kuskokwim Area, 1994. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development Division, Regional Information Report 3A95-15, Anchorage.
- Huttunen, D. C. 1984. 1982-1983 Kuskokwim River test fishing project. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim River Salmon Test Fishing Report No. 13, Bethel.
- Huttunen, D. C. 1985. Kuskokwim River salmon test fishing report, 1984. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim River Salmon Test Fishing Report No. 14, Bethel.
- Linderman, J. C., Jr., and D. J. Bergstrom. 2006. Kuskokwim River Chinook and chum salmon stock status and Kuskokwim area fisheries; a report to the Alaska Board of Fisheries. Alaska Department of Fish and Game, Special Publication No. 06-35, Anchorage.
- Martz, M., and C. Whitmore. 2005. Lower Kuskokwim River inseason subsistence salmon catch monitoring, 2004. Alaska Department of Fish and Game, Fishery Management Report No. 05-27, Anchorage.
- Meacham, C. P. 1978. Offshore test fishing in Bristol Bay. Alaska Department of Fish and Game, Division of Commercial Fisheries, Bristol Bay Data Report No. 69, Anchorage.
- Molyneaux, D. B. 1991. Bethel salmon test fishing project, 1990. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A91-21, Anchorage.
- Molyneaux, D. B. 1994. Bethel salmon test fishing project, 1991. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Technical Fisheries Report No. 94-20, Juneau.
- Molyneaux, D. B. 2003. Data summary for the Kuskokwim River salmon test fishery at Bethel, 1984-2002. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A03-06, Anchorage.

## **REFERENCES CITED (Continued)**

- Reimer, A. M. 2004. Chinook salmon creel survey an inriver gillnetting study, lower Kenai River, Alaska, 2002. Alaska Department of Fish and Game, Fishery Data Series No. 04-28, Anchorage.
- Waltemeyer, D. L. 1983. Migratory timing and abundance estimation of the 1982 sockeye salmon return to upper Cook Inlet based on a test fishing program. Alaska Department of Fish and Game, Division of Commercial Fisheries, Cook Inlet Data Report No. 83-1, Soldotna.

## **TABLES AND FIGURES**

Table 1.—The drift schedule used to determine the sequence (#) of stations and mesh sizes to be fished during each tidal drift series of the Bethel test fishery from June 1 through July 10 (A) and July 11 through August 24 (B), 2010.

(A) Schedule		Mesh Size (cm) and (Sequence)		
Number	Station:	1	2	3
1		20.3 (1)		20.3 (2)
			13.6 (3)	13.6 (4)
2		20.3 (1)	20.3 (2)	
		13.6 (4)		13.6 (3)
3			20.3 (1)	20.3 (2)
		13.6 (3)	13.6 (4)	
4		20.3 (1)	20.3 (2)	
			13.6 (4)	13.6 (3)
5			20.3 (1)	20.3 (2)
		13.6 (3)		13.6 (4)
6		20.3 (1)		20.3 (2)
		13.6 (4)	13.6 (3)	
(B) Schedule		Mesh Size (cm) and (Sequence)		
Number	Station:	1	2	3
1		13.6 (1)	13.6 (2)	13.6 (3)
2		13.6 (3)	13.6 (1)	13.6 (2)
3		13.6 (2)	13.6 (3)	13.6 (1)
4		13.6 (1)	13.6 (3)	13.6 (2)
5		13.6 (2)	13.6 (1)	13.6 (3)
6		13.6 (3)	13.6 (2)	13.6 (1)

Table 2.—Catch, daily mean tidal CPUE, cumulative mean tidal CPUE, and percent passage for the Bethel test fishery, 2010.

Date	Chinook				Sockeye				Chum				Coho			
	No. Caught	Daily Mean Tidal CPUE	Cumulative Mean Tidal CPUE	Percent Passage												
		Tidal CPUE	Tidal CPUE			Tidal CPUE	Tidal CPUE			Tidal CPUE	Tidal CPUE			Tidal CPUE	Tidal CPUE	
6/1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/2	2	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0
6/3	1	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0
6/4	2	3	7	1	0	0	0	0	1	4	4	0	0	0	0	0
6/5	0	0	7	1	0	0	0	0	1	3	6	0	0	0	0	0
6/6	1	1	8	2	0	0	0	0	0	0	6	0	0	0	0	0
6/7	1	1	10	2	0	0	0	0	0	0	6	0	0	0	0	0
6/8	0	0	10	2	0	0	0	0	0	0	6	0	0	0	0	0
6/9	1	1	11	2	0	0	0	0	0	0	6	0	0	0	0	0
6/10	1	1	13	3	0	0	0	0	1	3	9	0	0	0	0	0
6/11	3	4	17	4	0	0	0	0	0	0	9	0	0	0	0	0
6/12	4	6	23	5	1	3	3	0	2	6	15	0	0	0	0	0
6/13	8	11	34	7	1	3	6	0	4	11	26	0	0	0	0	0
6/14	6	8	42	9	0	0	6	0	2	6	31	0	0	0	0	0
6/15 <sup>a</sup>	10	31	73	16	4	15	21	2	5	19	50	1	0	0	0	0
6/16	28	39	112	24	10	26	46	3	14	35	86	1	0	0	0	0
6/17	13	18	130	28	8	19	65	5	19	47	133	2	0	0	0	0
6/18	28	38	168	36	9	19	84	6	121	253	386	5	0	0	0	0
6/19	21	25	193	42	28	58	142	10	84	156	542	7	0	0	0	0
6/20	14	17	210	46	3	7	149	11	20	46	588	8	0	0	0	0
6/21	30	34	244	53	45	102	251	18	75	176	764	10	0	0	0	0
6/22 <sup>a</sup>	3	23	267	58	9	72	323	23	37	190	954	12	0	0	0	0
6/23	14	18	285	62	11	24	347	25	36	95	1049	14	0	0	0	0
6/24	8	11	297	64	7	19	366	27	43	114	1163	15	0	0	0	0
6/25 <sup>a</sup>	1	5	302	65	0	8	375	27	6	61	1224	16	0	0	0	0
6/26	9	12	314	68	7	19	394	29	42	115	1340	18	0	0	0	0
6/27	10	13	327	71	8	17	411	30	76	184	1524	20	0	0	0	0
6/28	6	8	335	73	9	17	428	31	35	89	1613	21	0	0	0	0
6/29	10	13	349	76	7	18	446	32	51	126	1738	23	0	0	0	0
6/30	5	7	355	77	17	45	491	36	74	193	1931	25	0	0	0	0
7/1	5	7	362	79	10	24	515	38	119	265	2196	29	0	0	0	0
7/2	6	8	370	80	13	30	545	40	75	182	2378	31	0	0	0	0
7/3	8	11	381	83	7	16	561	41	151	461	2838	37	0	0	0	0
7/4 <sup>b</sup>	0	11	393	85	0	33	594	43	0	334	3172	41	0	0	0	0
7/5	7	12	404	88	10	51	645	47	85	207	3380	44	0	0	0	0
7/6 <sup>a</sup>	0	5	409	89	0	9	655	48	0	99	3478	45	0	0	0	0

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Table 2.—Page 2 of 3.

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Date	Chinook				Sockeye				Chum				Coho			
	Daily		Cumulative		Daily		Cumulative		Daily		Cumulative		Daily		Cumulative	
	No.	Tidal	Mean	Tidal	No.	Tidal	Mean	Tidal	No.	Tidal	Mean	Tidal	No.	Tidal	Mean	Tidal
No.	Caught	CPUE	Mean	CPUE	No.	Caught	CPUE	Mean	No.	CPUE	Mean	CPUE	No.	CPUE	Mean	CPUE
7/7	6	8	417	90	26	53	708	52	136	324	3802	50	0	0	0	0
7/8	4	5	422	92	21	58	766	56	205	402	4205	55	0	0	0	0
7/9 <sup>a</sup>	1	4	426	92	3	29	795	58	36	320	4524	59	0	0	0	0
7/10	4	5	431	94	29	63	858	62	81	192	4716	62	0	0	0	0
7/11	1	2	433	94	8	20	879	64	97	224	4940	65	0	0	0	0
7/12	1	4	438	95	11	36	914	67	49	149	5089	67	0	0	0	0
7/13	1	3	440	95	10	28	942	69	144	296	5385	70	0	0	0	0
7/14	1	2	443	96	22	53	995	72	149	327	5712	75	0	0	0	0
7/15	1	2	445	96	72	191	1186	86	134	374	6087	80	0	0	0	0
7/16	1	2	447	97	9	24	1209	88	47	124	6210	81	1	3	3	0
7/17 <sup>a</sup>	1	4	451	98	18	66	1275	93	25	124	6334	83	0	0	3	0
7/18	0	0	451	98	12	34	1309	95	56	148	6482	85	0	0	3	0
7/19 <sup>a</sup>	0	0	451	98	6	19	1328	97	62	170	6652	87	1	3	5	0
7/20	0	0	451	98	3	6	1333	97	19	35	6686	87	1	2	7	0
7/21	0	0	451	98	7	13	1346	98	82	150	6836	89	3	6	13	1
7/22	0	0	451	98	1	2	1348	98	41	73	6909	90	9	17	30	1
7/23	0	0	451	98	1	2	1350	98	71	125	7034	92	6	11	40	2
7/24 <sup>a</sup>	1	2	453	98	2	5	1355	99	33	138	7172	94	13	24	64	3
7/25 <sup>a</sup>	1	2	455	99	0	2	1357	99	12	82	7253	95	3	15	79	4
7/26	1	2	456	99	3	5	1362	99	42	76	7329	96	13	24	103	5
7/27	0	0	456	99	2	4	1366	99	17	35	7364	96	11	21	124	6
7/28	0	0	456	99	1	2	1368	100	29	54	7419	97	25	47	170	8
7/29	0	0	456	99	1	2	1370	100	51	88	7507	98	33	58	229	11
7/30	0	0	456	99	1	2	1371	100	20	36	7542	99	80	145	374	18
7/31	0	0	456	99	0	0	1371	100	5	10	7552	99	25	48	421	21
8/1	0	0	456	99	0	0	1371	100	7	13	7565	99	35	67	488	24
8/2	1	2	458	99	0	0	1371	100	7	13	7579	99	22	43	531	26
8/3	0	2	460	100	0	0	1371	100	9	9	7588	99	26	49	580	29
8/4 <sup>a</sup>	0	1	461	100	0	0	1371	100	0	9	7597	99	4	53	634	31
8/5	0	0	461	100	0	0	1371	100	6	11	7607	99	45	80	713	35
8/6	0	0	461	100	0	0	1371	100	5	9	7617	100	50	91	804	40
8/7	0	0	461	100	0	0	1371	100	4	7	7623	100	135	208	1011	50
8/8	0	0	461	100	0	0	1371	100	2	4	7627	100	82	230	1242	61
8/9	0	0	461	100	1	2	1374	100	2	6	7633	100	60	129	1371	68

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Table 2.—Page 3 of 3.

Date	Chinook				Sockeye				Chum				Coho			
	No. Caught	Daily Mean	Cumulative Mean	Tidal CPUE												
				Percent Passage												
8/10	0	0	461	100	0	0	1374	100	4	8	7641	100	134	246	1616	80
8/11	0	0	461	100	0	0	1374	100	1	2	7643	100	84	146	1762	87
8/12	0	0	461	100	0	0	1374	100	1	2	7645	100	36	69	1831	91
8/13	0	0	461	100	0	0	1374	100	0	0	7645	100	5	10	1840	91
8/14	0	0	461	100	0	0	1374	100	2	4	7649	100	15	31	1871	93
8/15 <sup>a</sup>	0	0	461	100	0	0	1374	100	0	2	7651	100	0	18	1889	93
8/16	0	0	461	100	0	0	1374	100	0	0	7651	100	6	12	1901	94
8/17	0	0	461	100	0	0	1374	100	0	0	7651	100	2	12	1913	95
8/18	0	0	461	100	0	0	1374	100	0	0	7651	100	0	0	1913	95
8/19	0	0	461	100	0	0	1374	100	0	0	7651	100	20	38	1951	96
8/20	0	0	461	100	0	0	1374	100	0	0	7651	100	15	35	1986	98
8/21	0	0	461	100	0	0	1374	100	0	0	7651	100	16	30	2016	100
8/22	0	0	461	100	0	0	1374	100	0	0	7651	100	1	2	2018	100
8/23	0	0	461	100	0	0	1374	100	0	0	7651	100	2	4	2022	100
8/24	0	0	461	100	0	0	1374	100	0	0	7651	100	1	2	2024	100
Totals	292				494				2872				1020			

Note: The boxes represent the central 50% of the run and the shaded cells represent the median passage date of the run.

<sup>a</sup> Estimated CPUE index used to represent data missing from one tide not fished on that date.

<sup>b</sup> Estimated CPUE index used to represent data missing from 2 tides not fished on that date.

Table 3.—Summary of inseason subsistence catch monitoring project in the Bethel area, Kuskokwim River, 2010.

Year	Week Ending	Number of Families			Chinook salmon <sup>a</sup>			Chum salmon <sup>a</sup>			Sockeye salmon <sup>a</sup>		
		Interviewed	Fishing	Not Fishing	% Very Good	% Normal	% Poor	% Very Good	% Normal	% Poor	% Very Good	% Normal	% Poor
2010	Jun 06	19	6	13	0	1	0	ND	ND	ND	ND	ND	ND
	Jun 13	39	28	11	4	50	46	0	72	28	ND	ND	ND
	Jun 20	26	23	3	9	65	26	0	100	0	0	96	4
	Jun 27	37	37	0	3	73	24	3	92	5	5	81	14
	Jul 04	38	36	2	8	69	22	14	78	8	3	69	28
	Jul 11	20	11	9	0	91	0	27	64	0	18	55	18

*Note:* Only reports from the month of June and the first 2 weeks of July were used for comparison between years. “ND” indicates that no data was collected. Beginning 2010 data will be represented as % response per category.

<sup>a</sup> Responses from the question: “Compared with this time in a ‘Normal’ year, how were catch rates for salmon this week?”



Figure 1.—Kuskokwim Management Area including commercial fishing Districts W-1, W-2, W-4, and W-5.

KUSKOKWIM MANAGEMENT AREA DISTRICT W-1  
KUSKOKWIM RIVER

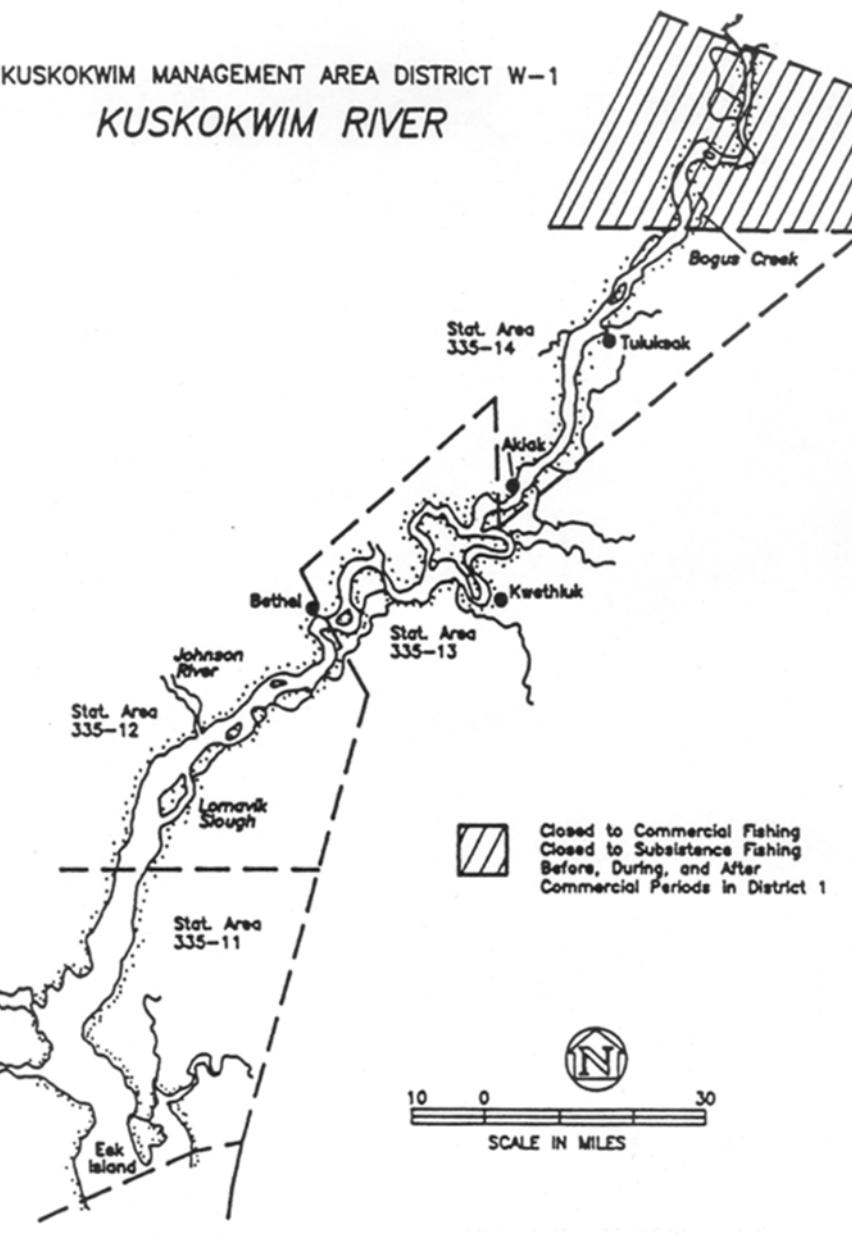


Figure 2.—District 1 (also known as District W-1), the Kuskokwim commercial salmon management area.

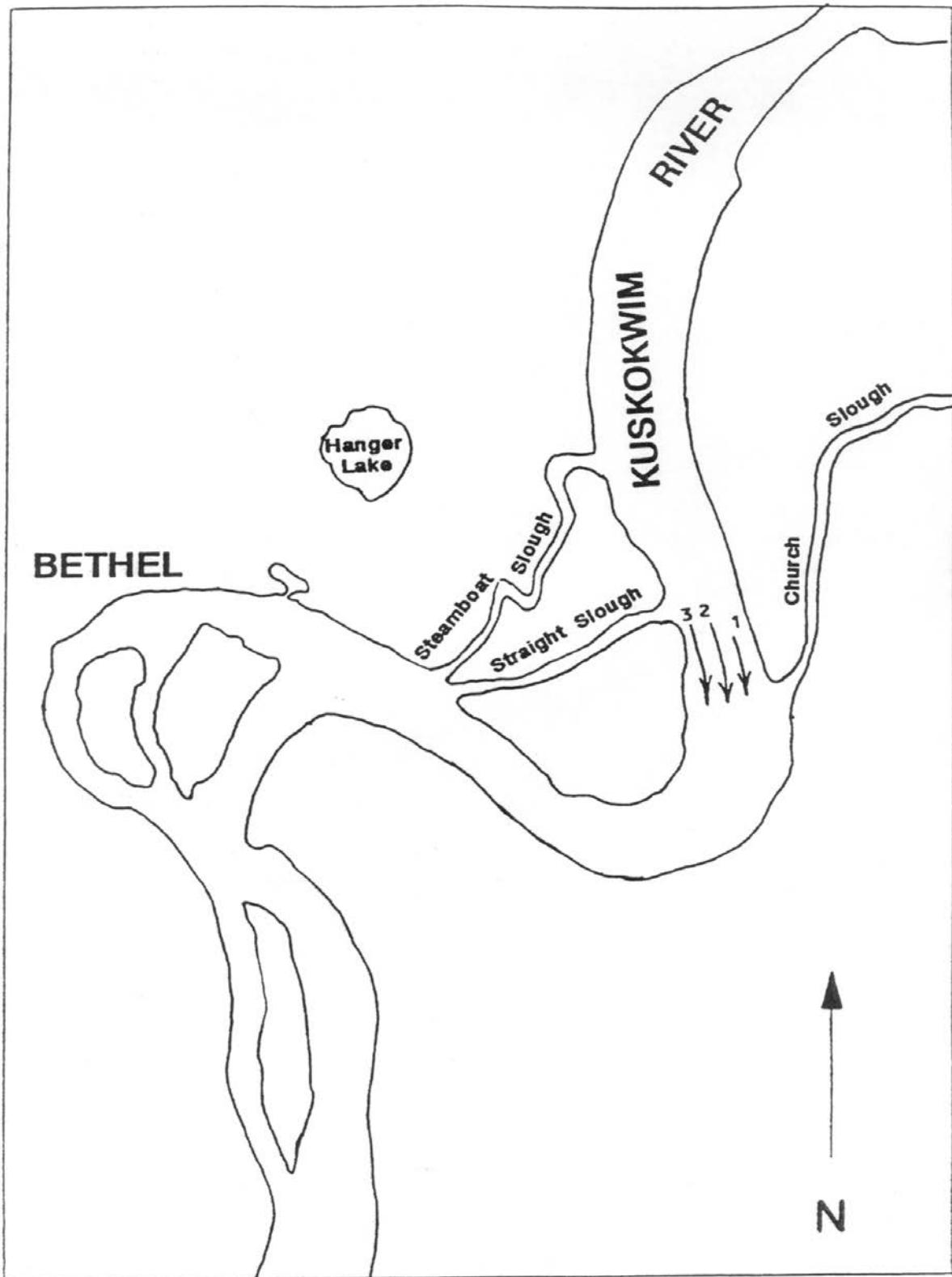
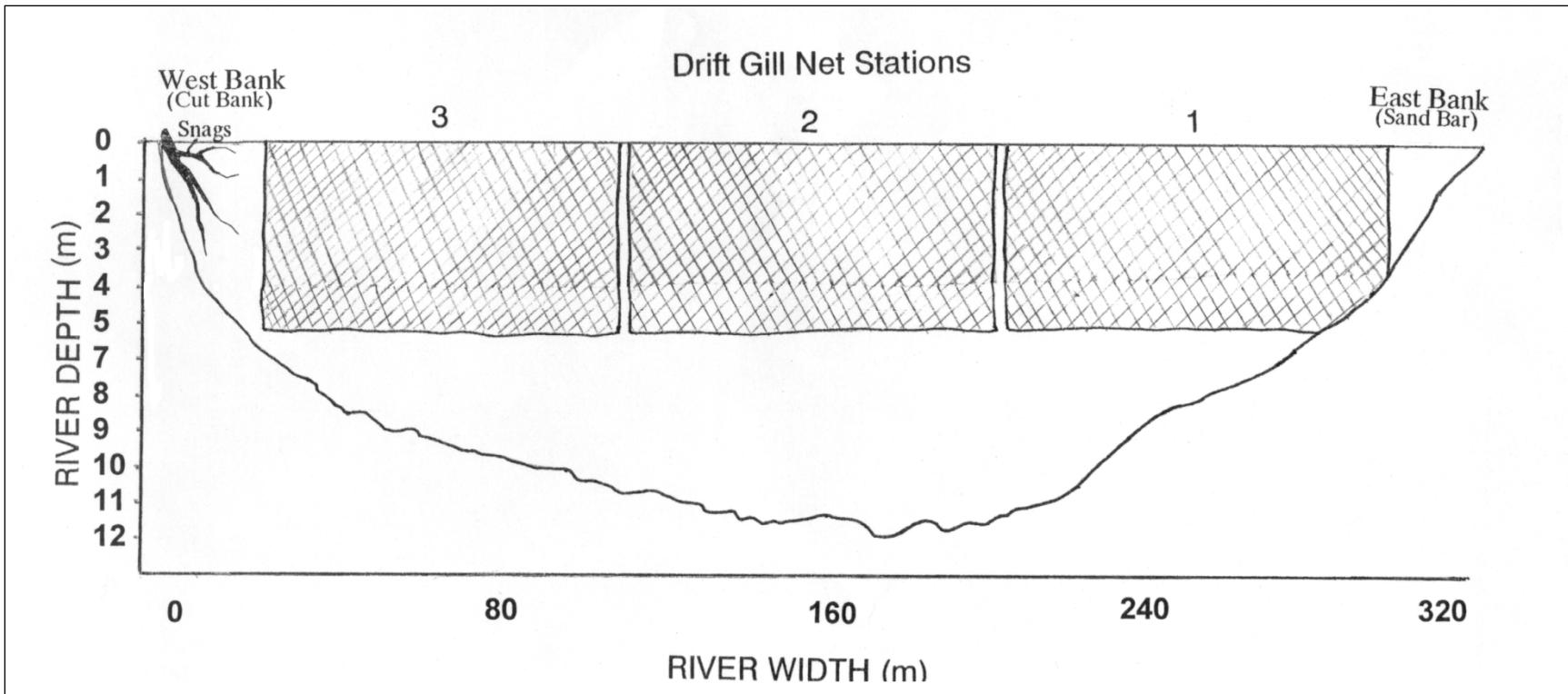


Figure 3.—Bethel test fishery drift stations 1, 2 and 3.



*Note:* The profile depicted was measured in 1995.

Figure 4.—Typical profile of the Kuskokwim River 4 miles upstream of Bethel, illustrating the area covered by gillnets used in the Bethel test fishery.

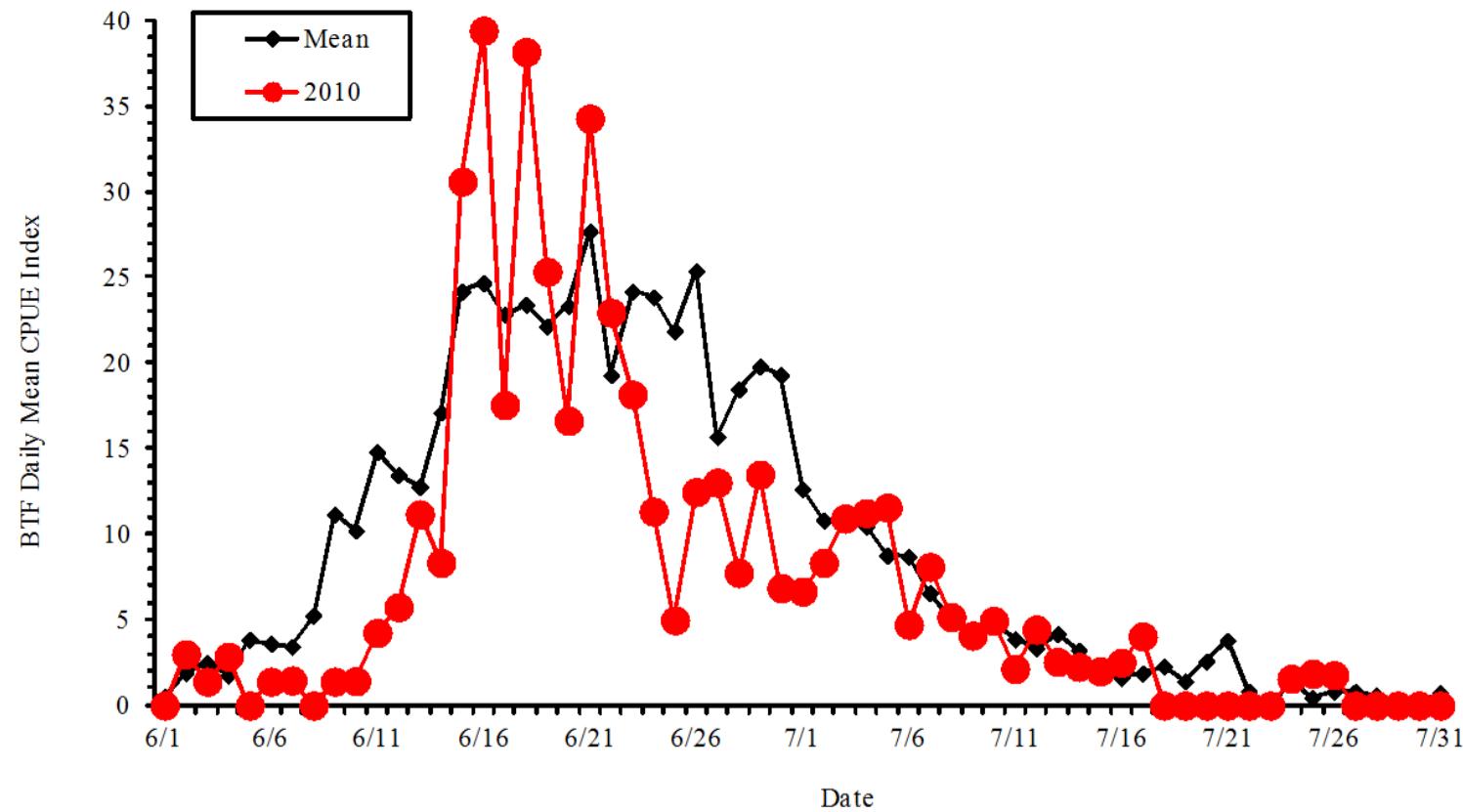


Figure 5.—Chinook salmon daily mean tidal CPUE indices for mean 2000–2009, and 2010, Bethel test fishery, 2010.

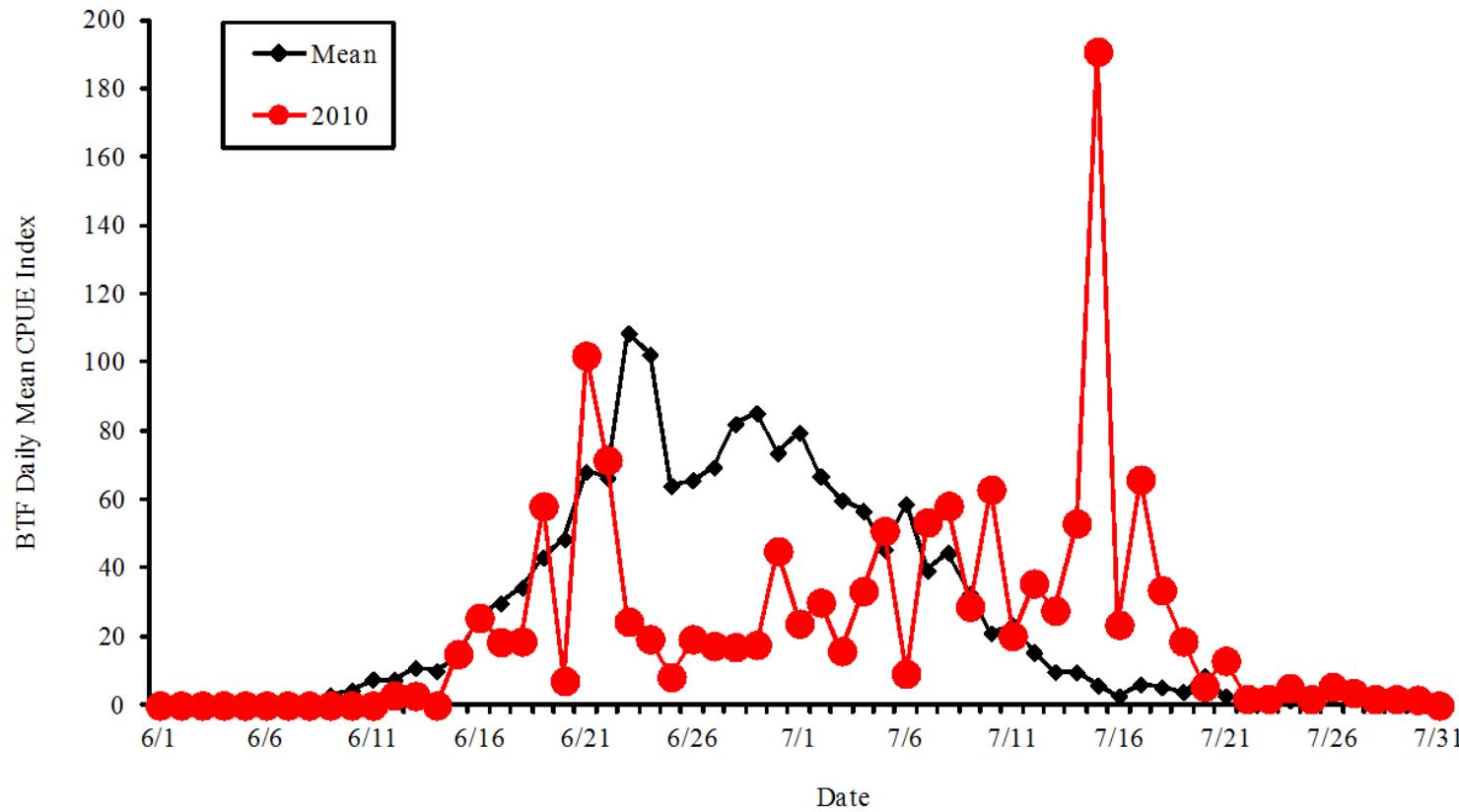


Figure 6.—Sockeye salmon daily mean tidal CPUE indices for mean 2000–2009, and 2010, Bethel test fishery, 2010.

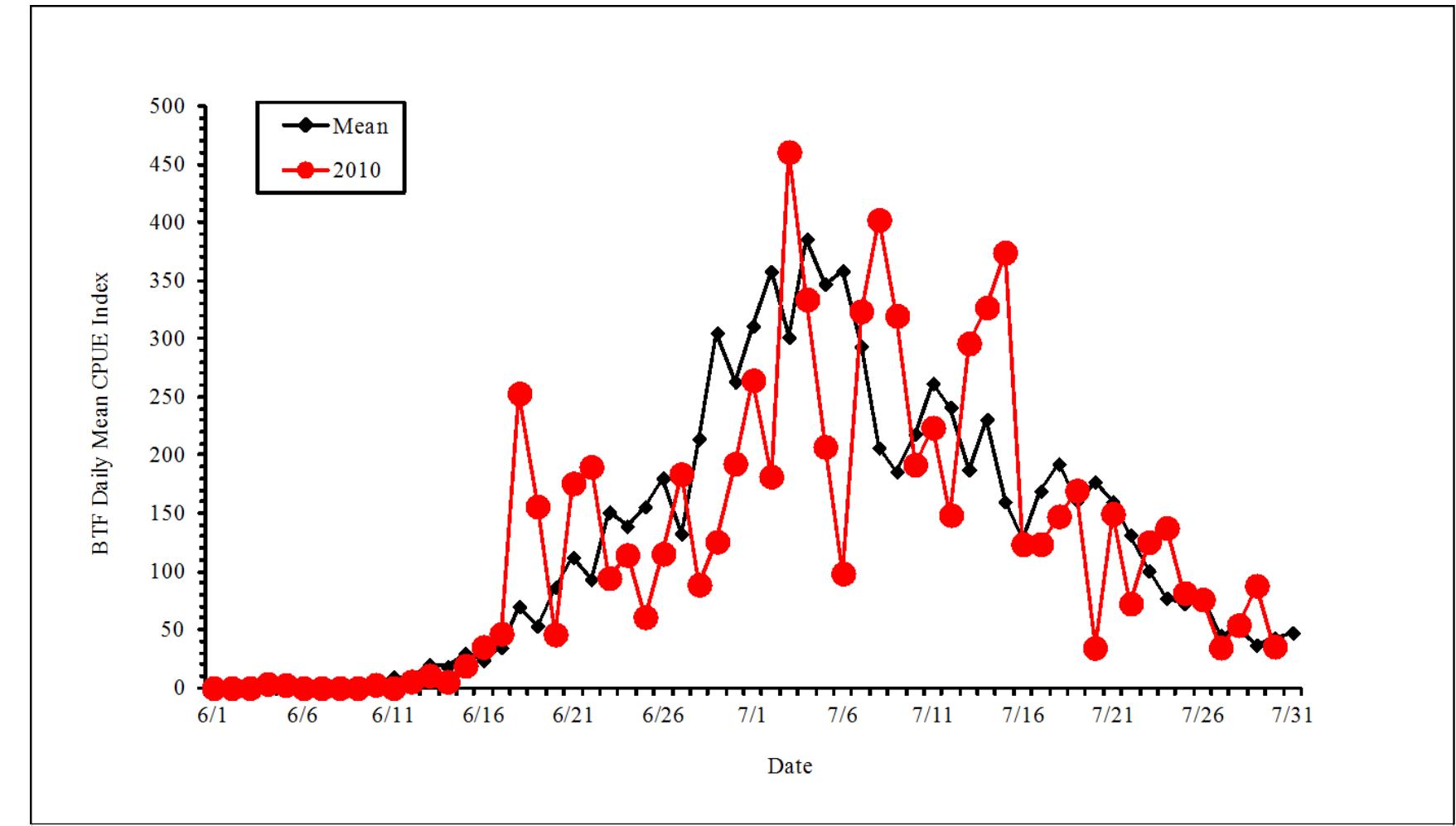


Figure 7.—Chum salmon daily mean tidal CPUE indices for mean 2000–2009, and 2010, Bethel test fishery, 2010.

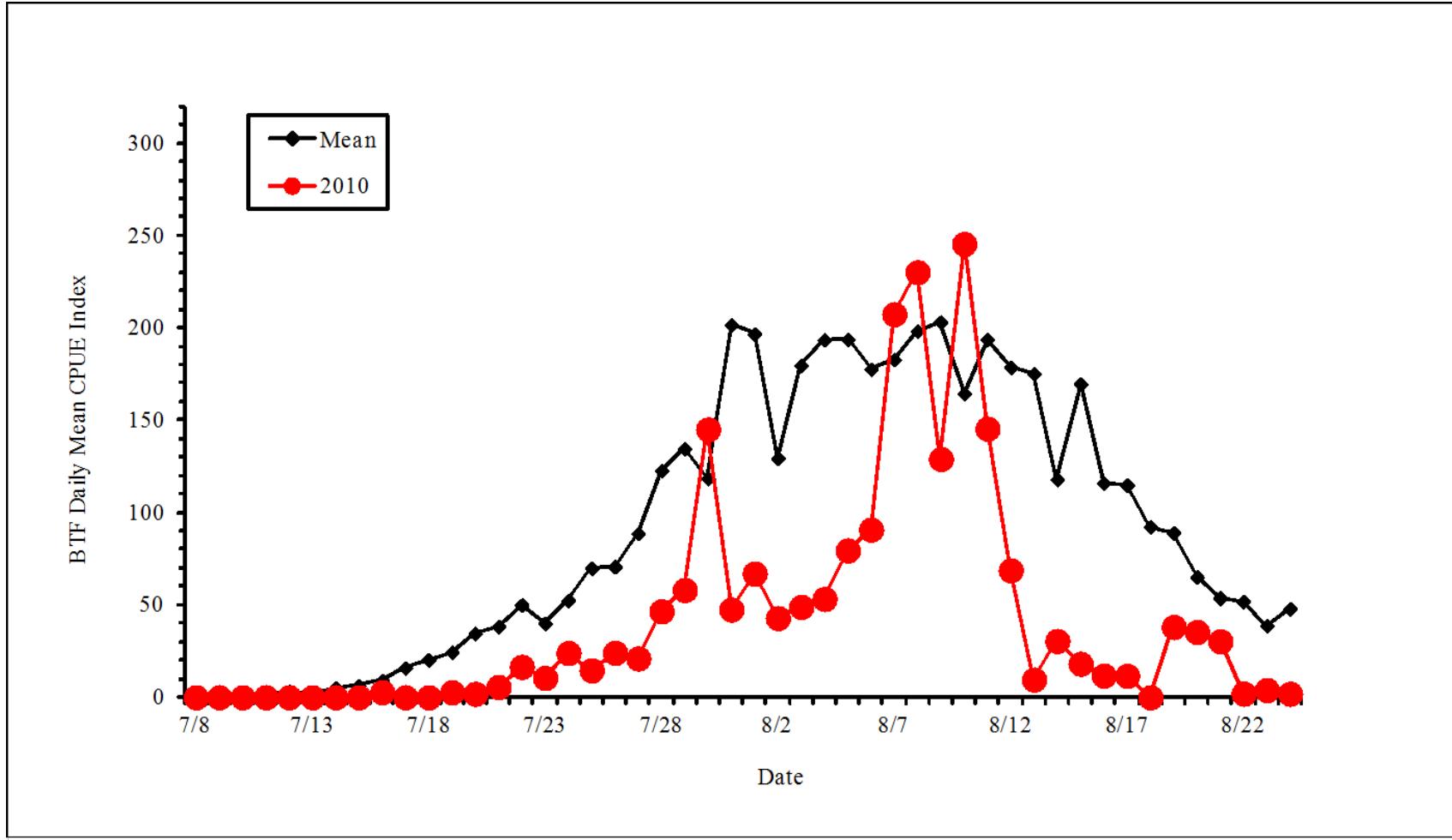


Figure 8.—Coho salmon daily mean tidal CPUE indices for mean 2000–2009, and 2010, Bethel test fishery, 2010.

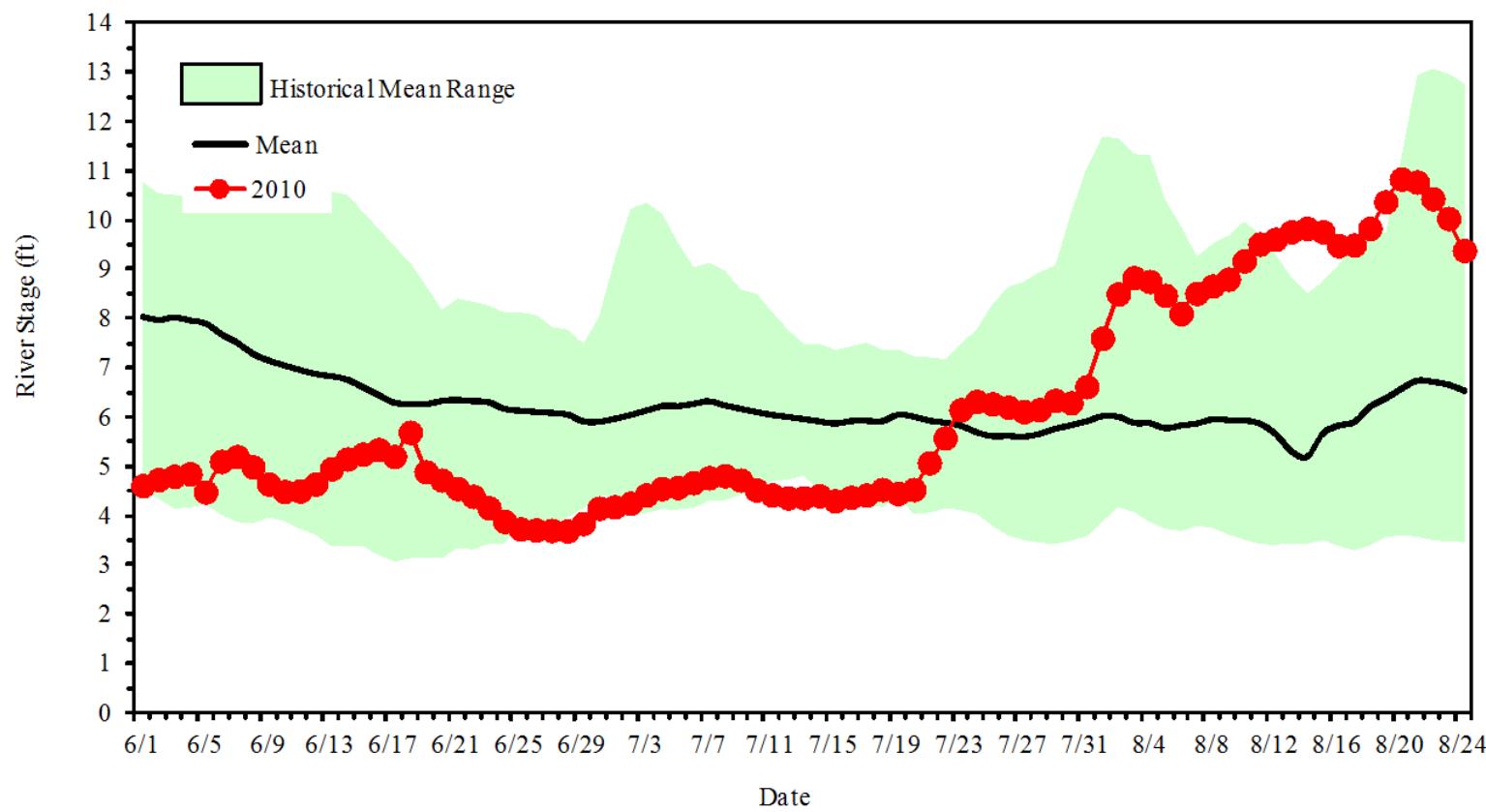


Figure 9.—Historical Kuskokwim River water level at Crooked Creek (2000–2010).

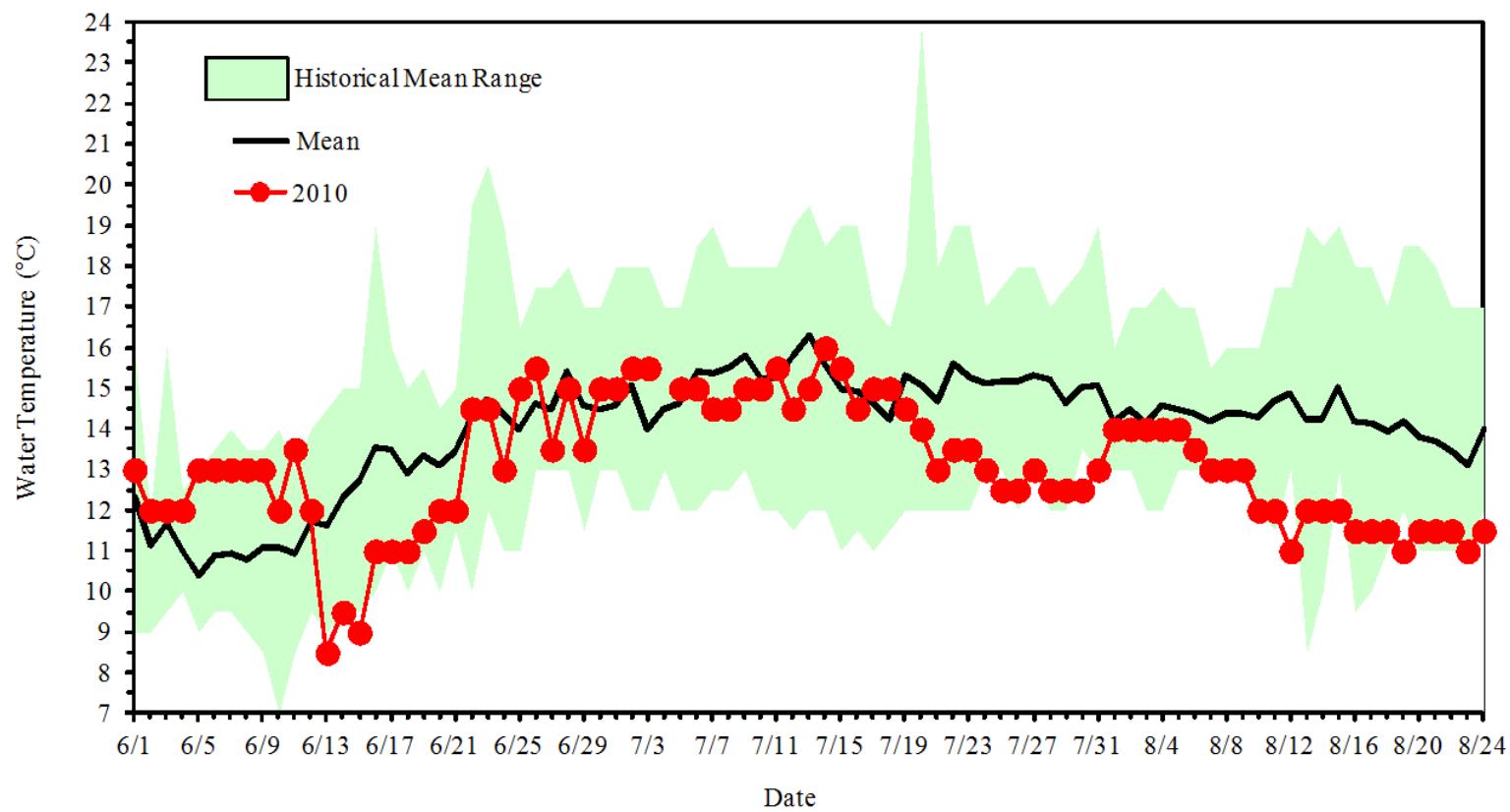


Figure 10.—Historic daily surface water temperature of the Kuskokwim River at the Bethel test-fish site, 2000–2010.

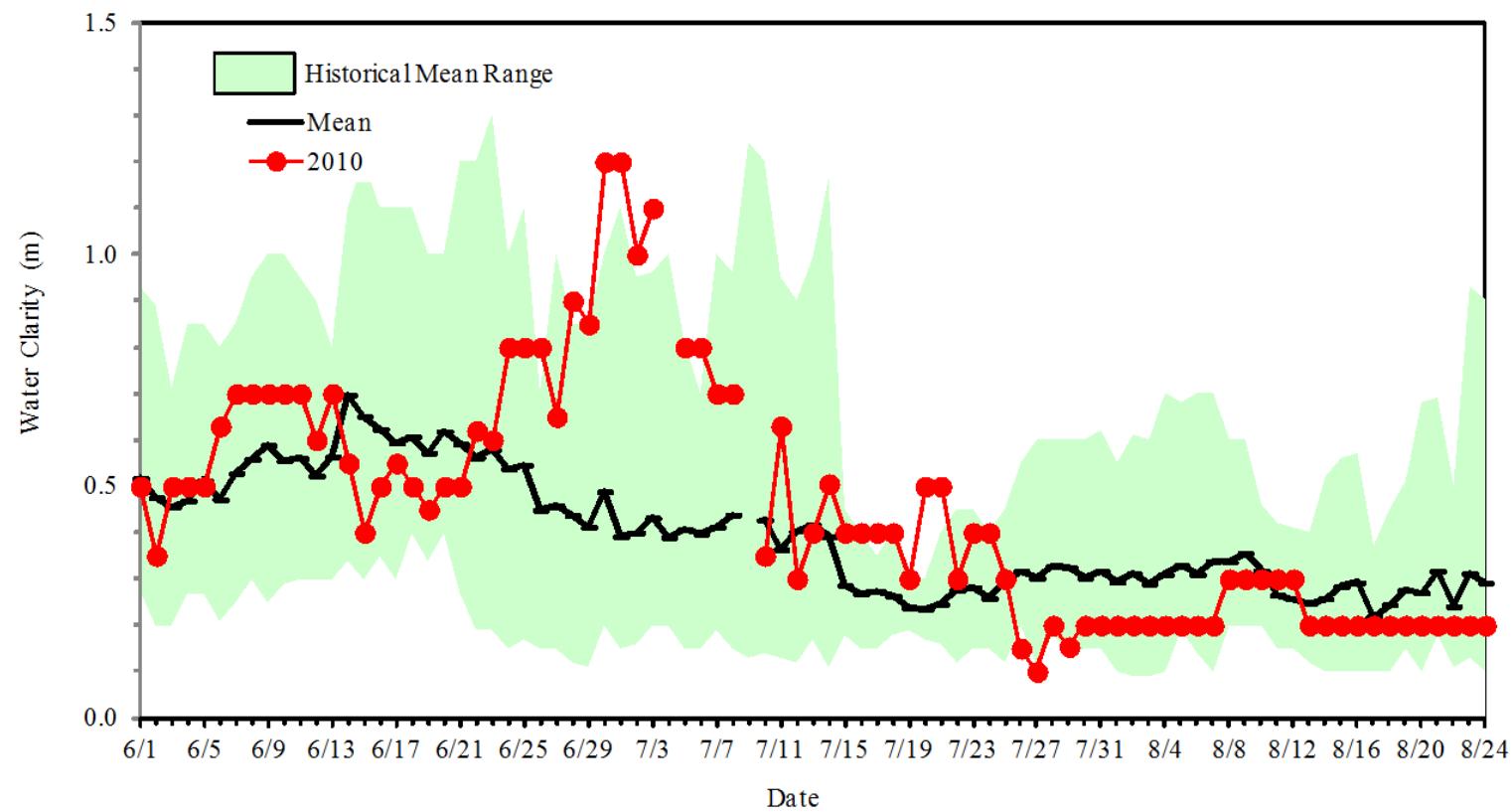


Figure 11.—Historic daily water clarity measurements of the Kuskokwim River at the Bethel test fish site, 2000–2010.

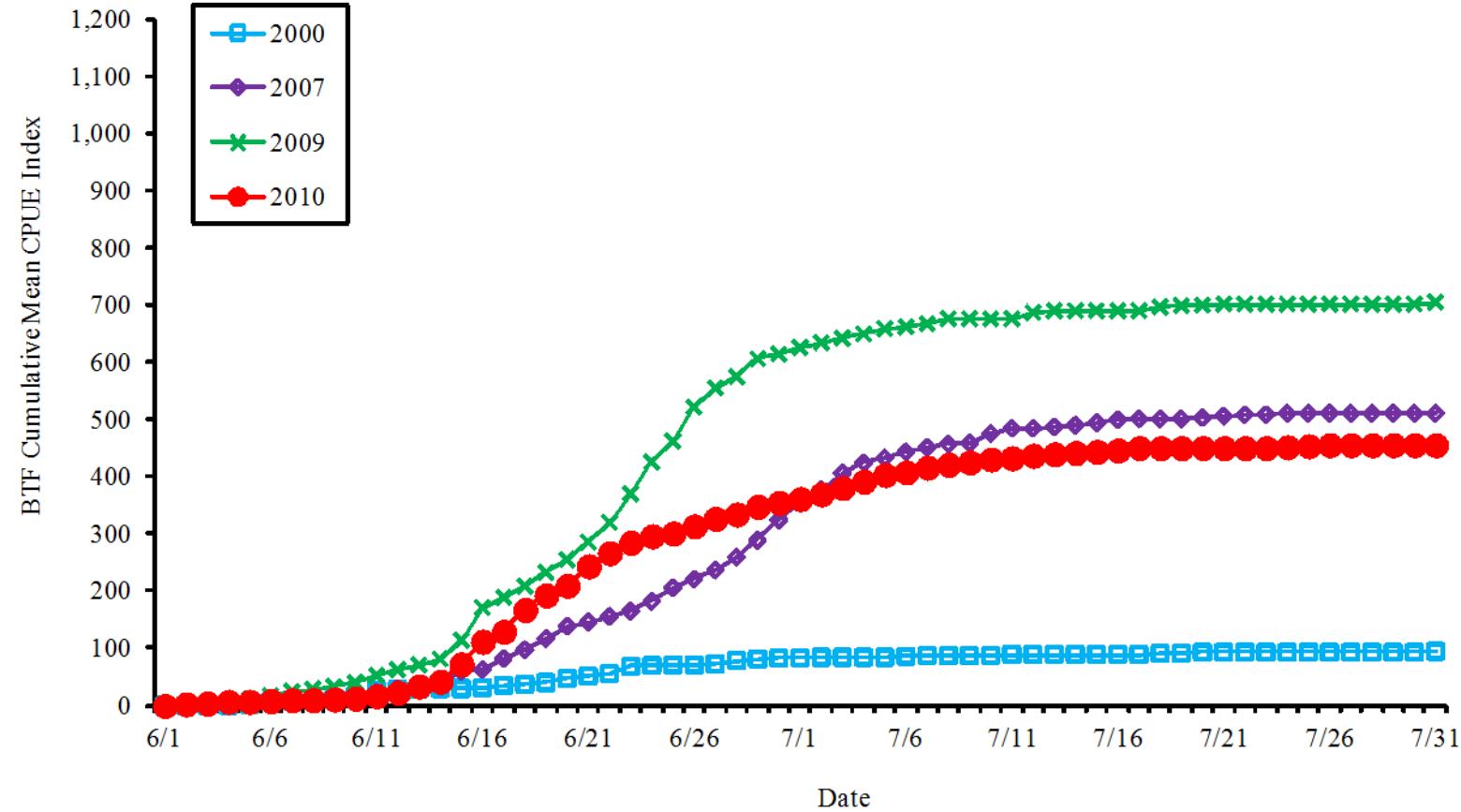


Figure 12.—Chinook salmon cumulative mean tidal CPUE indices for years 2000–2010 with similar water levels, Bethel test fishery, 2010.

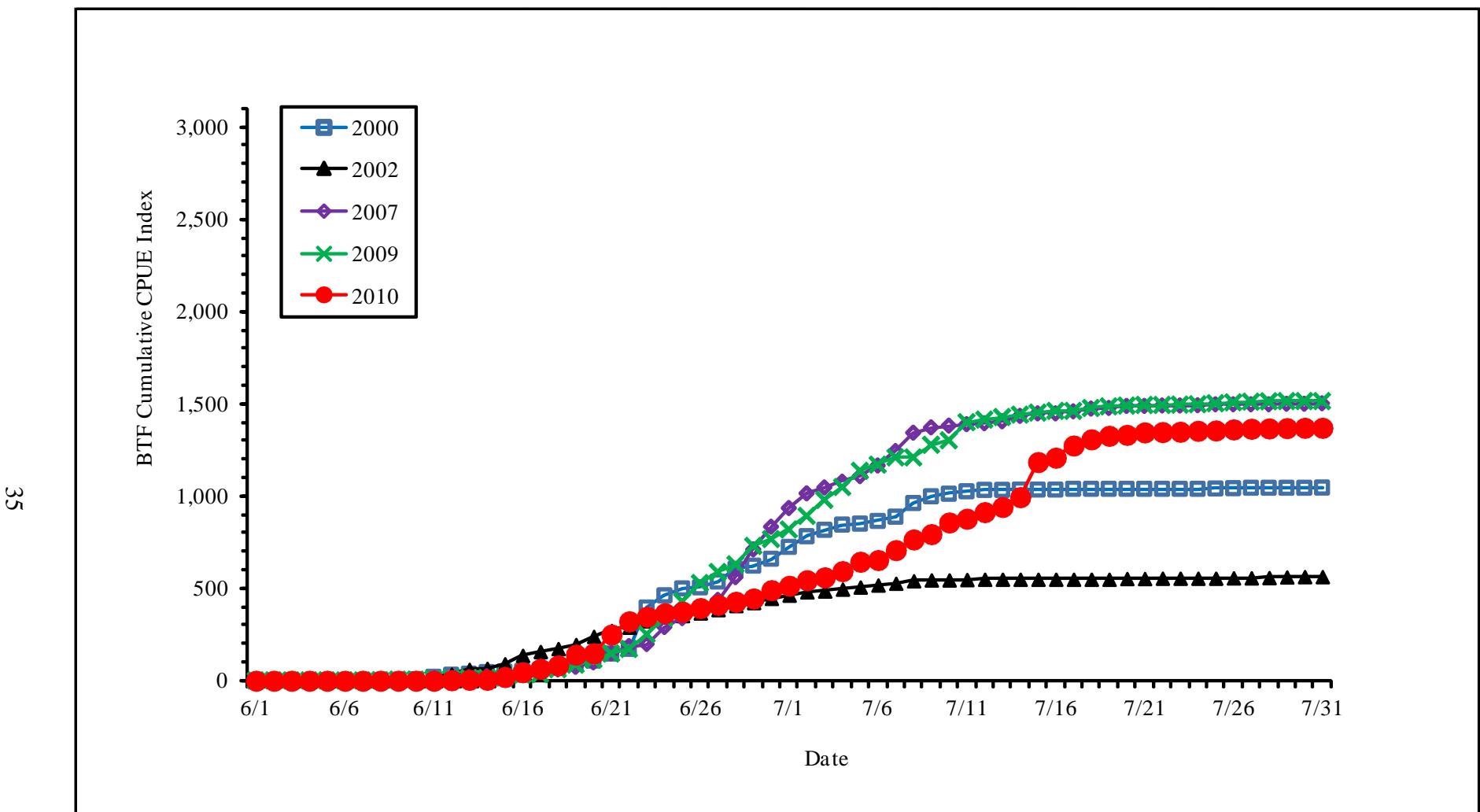


Figure 13.—Sockeye salmon cumulative mean tidal CPUE indices for years 2000–2010 with similar water levels, Bethel test fishery, 2010.

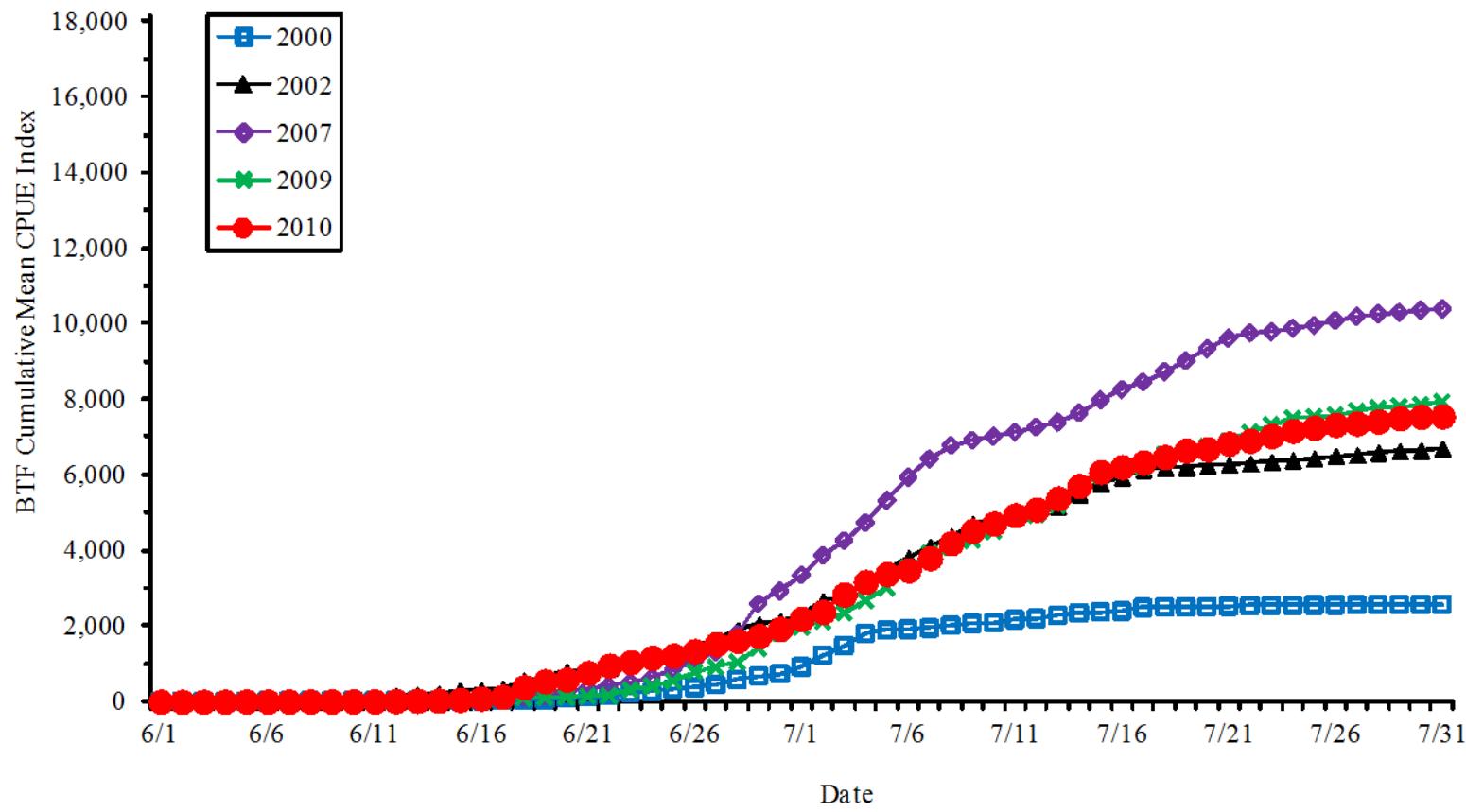


Figure 14.—Chum salmon cumulative mean tidal CPUE indices for years 2000–2010 with similar water levels, Bethel test fishery, 2010.

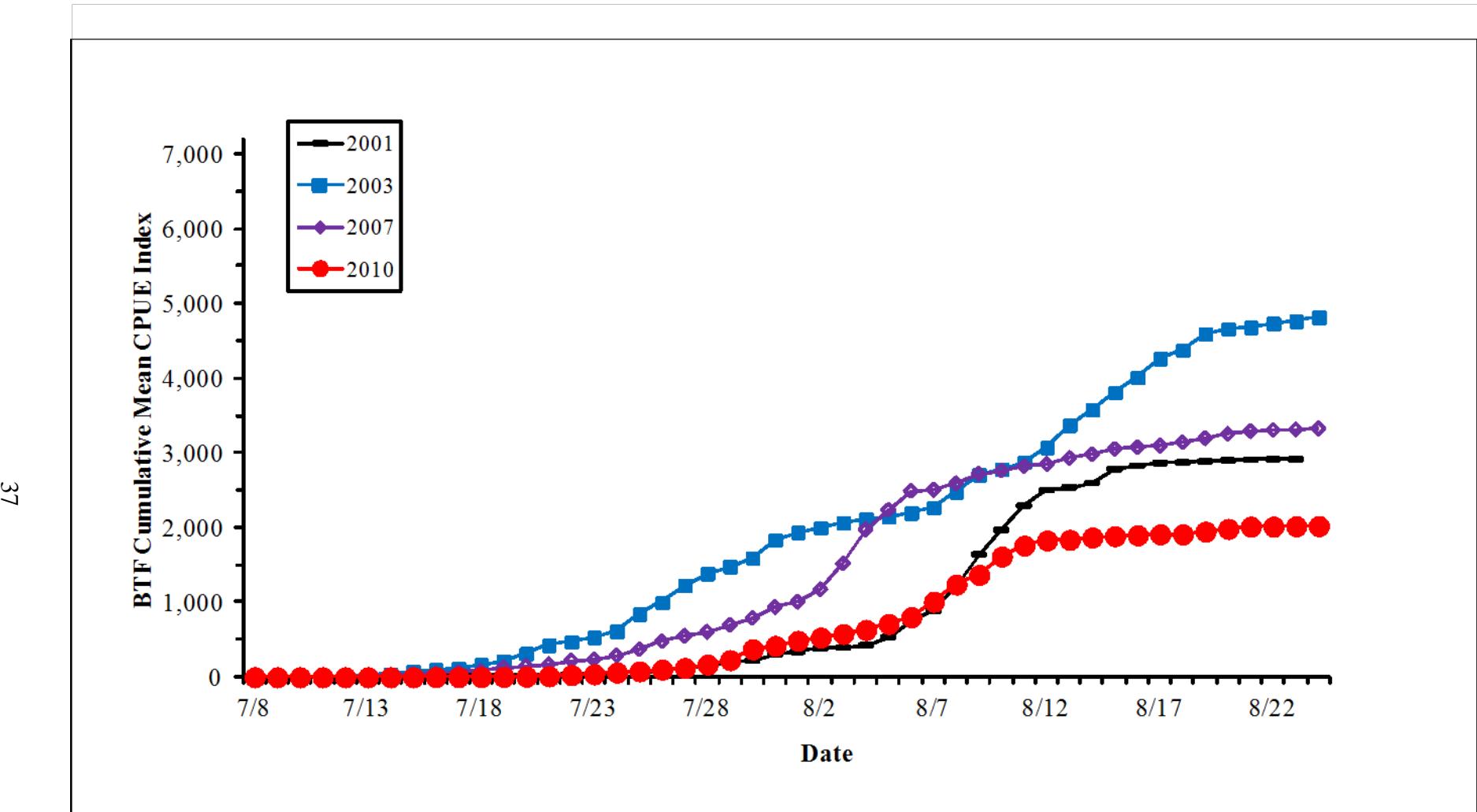


Figure 15.—Coho salmon cumulative mean tidal CPUE indices for years 2000–2010 with similar water levels, Bethel test fishery, 2010.



**APPENDIX A:**  
**CATCH AND CPUE BY DRIFT AND SPECIES**

Appendix A1.—Catch and CPUE by drift and by species for the Bethel test fishery, 2010.

Date	Tide No.	Drift No.	Station No.	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
				Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE						
6/1	1	1	1	8	50	15.0	0	0.0	0	0.0	0	0.0	0	0.0
6/1 <sup>a</sup>	1	2	3	8	50									
6/1	1	3	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/1	1	4	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/2	2	5	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/2	2	6	2	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/2	2	7	3	5.4	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/2	2	8	1	5.4	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/2	3	9	2	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/2	3	10	3	8	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/2	3	11	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/2	3	12	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/3	4	13	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/3	4	14	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/3	4	15	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/3	4	16	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/3	5	17	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/3	5	18	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/3	5	19	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/3	5	20	1	5.4	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/4	6	21	2	8	50	22.0	0	0.0	0	0.0	0	0.0	0	0.0
6/4	6	22	3	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/4	6	23	1	5.4	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/4	6	24	2	5.4	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/4	7	25	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/4	7	26	3	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/4	7	27	2	5.4	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/4	7	28	3	5.4	50	16.5	0	0.0	0	0.0	1	7.3	0	0.0
6/5	8	29	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/5	8	30	2	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/5	8	31	3	5.4	50	22.0	0	0.0	0	0.0	1	5.5	0	0.0
6/5	8	32	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/6	9	33	2	8	50	18.0	0	0.0	0	0.0	0	0.0	0	0.0
6/6	9	34	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/6	9	35	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/6	9	36	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/6	10	37	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/6	10	38	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/6	10	39	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/6	10	40	3	5.4	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/7	11	41	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/7	11	42	2	8	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
6/7	11	43	3	5.4	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
6/7	11	44	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/7	12	45	2	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/7	12	46	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/7	12	47	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/7	12	48	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/8	13	49	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/8	13	50	3	8	50	24.5	0	0.0	1	4.9	0	0.0	0	0.0
6/8	13	51	2	5.4	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/8	13	52	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/8	14	53	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/8	14	54	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/8	14	55	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0

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Date	Tide No.	Drift No.	Station No.	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
				Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE						
6/8	14	56	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/9	15	57	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/9	15	58	3	8	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/9	15	59	1	5.4	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/9	15	60	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/9	16	61	1	8	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/9	16	62	3	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/9	16	63	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/9	16	64	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/10	17	65	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/10	17	66	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/10	17	67	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/10	17	68	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/10	18	69	2	8	50	11.0	0	0.0	0	0.0	0	0.0	0	0.0
6/10	18	70	3	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/10	18	71	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/10	18	72	2	5.4	50	21.0	0	0.0	0	0.0	1	5.7	0	0.0
6/11	19	73	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/11	19	74	3	8	50	21.5	0	0.0	0	0.0	0	0.0	0	0.0
6/11	19	75	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/11	19	76	3	5.4	50	21.0	2	11.4	0	0.0	0	0.0	0	0.0
6/11	20	77	1	8	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/11	20	78	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/11	20	79	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/11	20	80	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/12	21	81	2	8	50	21.0	2	11.4	0	0.0	0	0.0	0	0.0
6/12	21	82	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/12	21	83	1	5.4	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
6/12	21	84	2	5.4	50	21.0	1	5.7	0	0.0	1	5.7	0	0.0
6/12	22	85	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/12	22	86	3	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/12	22	87	2	5.4	50	20.5	0	0.0	1	5.9	0	0.0	0	0.0
6/12	22	88	3	5.4	50	21.0	0	0.0	0	0.0	1	5.7	0	0.0
6/13	23	89	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/13	23	90	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/13	23	91	3	5.4	50	21.5	6	33.5	1	5.6	1	5.6	0	0.0
6/13	23	92	1	5.4	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
6/13	24	93	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/13	24	94	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/13	24	95	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/13	24	96	2	5.4	50	22.5	1	5.3	0	0.0	3	16.0	0	0.0
6/14	25	97	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/14	25	98	3	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/14	25	99	2	5.4	50	22.0	2	10.9	0	0.0	1	5.5	0	0.0
6/14	25	100	3	5.4	50	21.5	2	11.2	0	0.0	0	0.0	0	0.0
6/14	26	101	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/14	26	102	2	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/14	26	103	3	5.4	50	21.5	1	5.6	0	0.0	1	5.6	0	0.0
6/14	26	104	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/15 <sup>b</sup>	27													
6/15	28	105	1	8	50	21.5	4	22.3	0	0.0	1	5.6	0	0.0
6/15	28	106	3	8	50	21.0	1	5.7	1	5.7	0	0.0	0	0.0
6/15	28	107	2	5.4	50	21.5	2	11.2	2	11.2	1	5.6	0	0.0

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Date	Tide No.	Drift No.	Station No.	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
				Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
6/15	28	108	3	5.4	50	21.5	3	16.7	1	5.6	3	16.7	0	0.0
6/16	29	109	1	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/16	29	110	2	8	50	23.0	6	31.3	0	0.0	0	0.0	0	0.0
6/16	29	111	3	5.4	50	23.5	5	25.5	0	0.0	0	0.0	0	0.0
6/16	29	112	1	5.4	50	22.5	8	42.7	5	26.7	5	26.7	0	0.0
6/16	30	113	2	8	50	15.0	2	16.0	0	0.0	0	0.0	0	0.0
6/16	30	114	3	8	50	22.0	2	10.9	0	0.0	0	0.0	0	0.0
6/16	30	115	1	5.4	50	24.5	3	14.7	5	24.5	9	44.1	0	0.0
6/16	30	116	2	5.4	50	11.0	1	10.9	0	0.0	0	0.0	0	0.0
6/17	31	117	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/17	31	118	3	8	50	21.0	4	22.9	0	0.0	0	0.0	0	0.0
6/17	31	119	2	5.4	50	23.5	3	15.3	2	10.2	7	35.7	0	0.0
6/17	31	120	3	5.4	50	21.0	0	0.0	0	0.0	1	5.7	0	0.0
6/17	32	121	1	8	50	20.0	0	0.0	0	0.0	1	6.0	0	0.0
6/17	32	122	2	8	50	21.0	1	5.7	1	5.7	0	0.0	0	0.0
6/17	32	123	3	5.4	50	23.0	4	20.9	2	10.4	10	52.2	0	0.0
6/17	32	124	1	5.4	50	22.0	1	5.5	3	16.4	0	0.0	0	0.0
6/18	33	125	2	8	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
6/18	33	126	3	8	50	22.0	5	27.3	0	0.0	1	5.5	0	0.0
6/18	33	127	1	5.4	50	14.0	5	42.9	0	0.0	2	17.1	0	0.0
6/18	33	128	2	5.4	50	25.0	2	9.6	2	9.6	28	134.4	0	0.0
6/18	34	129	1	8	50	22.5	0	0.0	0	0.0	0	0.0	0	0.0
6/18	34	130	3	8	50	25.0	10	48.0	0	0.0	0	0.0	0	0.0
6/18	34	131	2	5.4	50	29.0	1	4.1	4	16.6	45	186.2	0	0.0
6/18	34	132	3	5.4	50	32.0	4	15.0	3	11.3	45	168.8	0	0.0
6/19	35	133	1	8	50	22.5	0	0.0	1	5.3	0	0.0	0	0.0
6/19	35	134	2	8	50	23.5	3	15.3	0	0.0	1	5.1	0	0.0
6/19	35	135	3	5.4	50	23.5	2	10.2	2	10.2	6	30.6	0	0.0
6/19	35	136	1	5.4	50	25.5	3	14.1	7	32.9	20	94.1	0	0.0
6/19	36	137	2	8	50	22.0	2	10.9	0	0.0	0	0.0	0	0.0
6/19	36	138	3	8	50	22.0	2	10.9	2	10.9	1	5.5	0	0.0
6/19	36	139	1	5.4	50	24.0	6	30.0	12	60.0	2	10.0	0	0.0
6/19	36	140	2	5.4	50	36.5	3	9.9	4	13.2	54	177.5	0	0.0
6/20	37	141	1	8	50	23.0	1	5.2	0	0.0	0	0.0	0	0.0
6/20	37	142	3	8	50	23.5	3	15.3	0	0.0	0	0.0	0	0.0
6/20	37	143	2	5.4	50	24.5	2	9.8	2	9.8	5	24.5	0	0.0
6/20	37	144	3	5.4	50	26.5	8	36.2	1	4.5	15	67.9	0	0.0
6/21	38	145	1	8	50	22.0	0	0.0	2	10.9	0	0.0	0	0.0
6/21	38	146	2	8	50	27.0	10	44.4	6	26.7	0	0.0	0	0.0
6/21	38	147	3	5.4	50	33.5	10	35.8	11	39.4	47	168.4	0	0.0
6/21	38	148	1	5.4	50	17.5	1	6.9	17	116.6	22	150.9	0	0.0
6/21	39	149	2	8	50	20.5	2	11.7	0	0.0	0	0.0	0	0.0
6/21	39	150	3	8	50	21.0	2	11.4	0	0.0	0	0.0	0	0.0
6/21	39	151	1	5.4	50	22.5	3	16.0	7	37.3	0	0.0	0	0.0
6/21	39	152	2	5.4	50	22.0	2	10.9	2	10.9	6	32.7	0	0.0
6/22 <sup>c</sup>	40													
6/22	41	153	1	8	50	21.5	1	5.6	0	0.0	1	5.6	0	0.0
6/22	41	154	2	8	50	24.0	0	0.0	0	0.0	2	10.0	0	0.0
6/22	41	155	3	5.4	50	26.5	0	0.0	6	27.2	17	77.0	0	0.0
6/22	41	156	1	5.4	50	26.5	2	9.1	3	13.6	17	77.0	0	0.0
6/23	42	157	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/23	42	158	2	8	50	21.0	3	17.1	1	5.7	0	0.0	0	0.0
6/23	42	159	3	5.4	50	22.0	2	10.9	0	0.0	11	60.0	0	0.0
6/23	42	160	1	5.4	50	24.5	8	39.2	10	49.0	15	73.5	0	0.0

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Date	Tide No.	Drift No.	Station No.	Mesh Size (in)	Net Length (Fathoms)	Fishing Time (min)	Chinook		Sockeye		Chum		Coho	
							No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
6/23	43	161	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/23	43	162	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/23	43	163	1	5.4	50	20.5	0	0.0	0	0.0	3	17.6	0	0.0
6/23	43	164	2	5.4	50	22.0	1	5.5	0	0.0	7	38.2	0	0.0
6/24	44	165	1	8	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
6/24	44	166	3	8	50	21.0	1	5.7	0	0.0	1	5.7	0	0.0
6/24	44	167	2	5.4	50	21.0	2	11.4	3	17.1	7	40.0	0	0.0
6/24	44	168	3	5.4	50	22.5	0	0.0	2	10.7	18	96.0	0	0.0
6/24	45	169	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/24	45	170	3	8	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/24	45	171	1	5.4	50	22.0	2	10.9	2	10.9	17	92.7	0	0.0
6/24	45	172	2	5.4	50	20.5	2	11.7	0	0.0	0	0.0	0	0.0
6/25	46	173	1	8	50	15.0	0	0.0	0	0.0	0	0.0	0	0.0
6/25	46	174	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/25	46	175	2	5.4	50	20.5	1	5.9	0	0.0	1	5.9	0	0.0
6/25	46	176	3	5.4	50	21.5	0	0.0	0	0.0	5	27.9	0	0.0
6/25 <sup>d</sup>	47													
6/26	48	177	2	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/26	48	178	3	8	50	20.5	2	11.7	0	0.0	0	0.0	0	0.0
6/26	48	179	1	5.4	50	22.0	4	21.8	1	5.5	6	32.7	0	0.0
6/26	48	180	2	5.4	50	22.0	3	16.4	2	10.9	21	114.5	0	0.0
6/26	49	181	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
6/26	49	182	3	8	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
6/26	49	183	2	5.4	50	21.5	0	0.0	2	11.2	9	50.2	0	0.0
6/26	49	184	3	5.4	50	21.5	0	0.0	2	11.2	6	33.5	0	0.0
6/27	50	185	1	8	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
6/27	50	186	2	8	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
6/27	50	187	3	5.4	50	22.5	2	10.7	0	0.0	15	80.0	0	0.0
6/27	50	188	1	5.4	50	23.5	3	15.3	1	5.1	13	66.4	0	0.0
6/27	51	189	2	8	50	22.0	0	0.0	1	5.5	1	5.5	0	0.0
6/27	51	190	3	8	50	21.5	1	5.6	0	0.0	3	16.7	0	0.0
6/27	51	191	1	5.4	50	24.5	3	14.7	5	24.5	16	78.4	0	0.0
6/27	51	192	2	5.4	50	23.5	0	0.0	1	5.1	28	143.0	0	0.0
6/28	52	193	1	8	50	20.0	0	0.0	2	12.0	0	0.0	0	0.0
6/28	52	194	3	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/28	52	195	2	5.4	50	20.5	0	0.0	0	0.0	4	23.4	0	0.0
6/28	52	196	3	5.4	50	25.5	3	14.1	5	23.5	15	70.6	0	0.0
6/28	53	197	1	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/28	53	198	2	8	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
6/28	53	199	3	5.4	50	23.0	0	0.0	1	5.2	14	73.0	0	0.0
6/28	53	200	1	5.4	50	22.5	1	5.3	1	5.3	2	10.7	0	0.0
6/29	54	201	2	8	50	21.5	3	16.7	0	0.0	0	0.0	0	0.0
6/29	54	202	3	8	50	21.5	2	11.2	0	0.0	0	0.0	0	0.0
6/29	54	203	1	5.4	50	24.5	2	9.8	5	24.5	17	83.3	0	0.0
6/29	54	204	2	5.4	50	24.5	0	0.0	0	0.0	30	146.9	0	0.0
6/29	55	205	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
6/29	55	206	3	8	50	21.5	1	5.6	0	0.0	0	0.0	0	0.0
6/29	55	207	2	5.4	50	21.5	0	0.0	1	5.6	0	0.0	0	0.0
6/29	55	208	3	5.4	50	22.5	2	10.7	1	5.3	4	21.3	0	0.0
6/30	56	209	1	8	50	22.0	1	5.5	1	5.5	0	0.0	0	0.0
6/30	56	210	2	8	50	21.5	0	0.0	0	0.0	5	27.9	0	0.0
6/30	56	211	3	5.4	50	25.5	1	4.7	3	14.1	13	61.2	0	0.0
6/30	56	212	1	5.4	50	20.5	1	5.9	12	70.2	41	240.0	0	0.0
6/30	57	213	2	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
6/30	57	214	3	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0

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Date	Tide No.	Drift No.	Station No.	Mesh Size (in)	Net Length (Fathoms)	Fishing Time (min)	Chinook		Sockeye		Chum		Coho	
							No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
6/30	57	215	1	5.4	50	21.5	0	0.0	0	0.0	8	44.7	0	0.0
6/30	57	216	2	5.4	50	21.0	1	5.7	1	5.7	7	40.0	0	0.0
7/1	58	217	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
7/1	58	218	3	8	50	21.0	1	5.7	0	0.0	1	5.7	0	0.0
7/1	58	219	2	5.4	50	25.0	0	0.0	1	4.8	32	153.6	0	0.0
7/1	58	220	3	5.4	50	33.0	1	3.6	2	7.3	47	170.9	0	0.0
7/1	59	221	1	8	50	21.0	1	5.7	0	0.0	0	0.0	0	0.0
7/1	59	222	2	8	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
7/1	59	223	3	5.4	50	21.0	1	5.7	0	0.0	9	51.4	0	0.0
7/1	59	224	1	5.4	50	23.5	0	0.0	7	35.7	30	153.2	0	0.0
7/2	60	225	2	8	50	23.0	4	20.9	0	0.0	2	10.4	0	0.0
7/2	60	226	3	8	50	16.5	1	7.3	1	7.3	1	7.3	0	0.0
7/2	60	227	1	5.4	50	25.5	0	0.0	5	23.5	22	103.5	0	0.0
7/2	60	228	2	5.4	50	22.5	0	0.0	4	21.3	19	101.3	0	0.0
7/2	61	229	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
7/2	61	230	3	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
7/2	61	231	2	5.4	50	23.0	1	5.2	1	5.2	17	88.7	0	0.0
7/2	61	232	3	5.4	50	24.0	0	0.0	2	10.0	14	70.0	0	0.0
7/3	62	233	1	8	50	21.0	0	0.0	0	0.0	1	5.7	0	0.0
7/3	62	234	2	8	50	22.5	1	5.3	1	5.3	0	0.0	0	0.0
7/3	62	235	3	5.4	50	25.5	2	9.4	4	18.8	50	235.3	0	0.0
7/3	62	236	1	5.4	50	18.5	0	0.0	2	13.0	72	467.0	0	0.0
7/3	63	237	1	8	50	21.5	1	5.6	0	0.0	1	5.6	0	0.0
7/3	63	238	3	8	50	23.0	3	15.7	0	0.0	2	10.4	0	0.0
7/3	63	239	1	5.4	50	8.5	0	0.0	0	0.0	4	56.5	0	0.0
7/3	63	240	2	5.4	50	15.5	1	7.7	0	0.0	21	162.6	0	0.0
7/4 <sup>e</sup>	64													
7/4 <sup>e</sup>	65													
7/5	66	241	1	8	50	20.5	0	0.0	0	0.0	2	11.7	0	0.0
7/5	66	242	3	8	50	21.0	1	5.7	0	0.0	1	5.7	0	0.0
7/5	66	243	2	5.4	50	21.0	1	5.7	1	5.7	3	17.1	0	0.0
7/5	66	244	3	5.4	50	22.0	1	5.5	0	0.0	10	54.5	0	0.0
7/5	67	245	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
7/5	67	246	2	8	50	21.5	3	16.7	0	0.0	3	16.7	0	0.0
7/5	67	247	3	5.4	50	31.0	0	0.0	2	7.7	56	216.8	0	0.0
7/5	67	248	1	5.4	50	9.5	1	12.6	7	88.4	10	126.3	0	0.0
7/6 <sup>d</sup>	68													
7/7	69	249	2	8	50	20.5	1	5.9	1	5.9	3	17.6	0	0.0
7/7	69	250	3	8	50	21.0	1	5.7	3	17.1	1	5.7	0	0.0
7/7	69	251	1	5.4	50	25.0	0	0.0	9	43.2	38	182.4	0	0.0
7/7	69	252	2	5.4	50	26.0	0	0.0	7	32.3	31	143.1	0	0.0
7/7	70	253	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
7/7	70	254	3	8	50	20.5	1	5.9	0	0.0	0	0.0	0	0.0
7/7	70	255	2	5.4	50	22.5	0	0.0	4	21.3	22	117.3	0	0.0
7/7	70	256	3	5.4	50	24.0	3	15.0	2	10.0	41	205.0	0	0.0
7/8	71	257	1	8	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
7/8	71	258	2	8	50	24.0	2	10.0	1	5.0	2	10.0	0	0.0
7/8	71	259	3	5.4	50	37.5	0	0.0	4	12.8	71	227.2	0	0.0
7/8	71	260	1	5.4	50	14.0	0	0.0	9	77.1	24	205.7	0	0.0
7/8	72	261	2	8	50	20.5	0	0.0	0	0.0	1	5.9	0	0.0
7/8	72	262	3	8	50	22.5	2	10.7	0	0.0	2	10.7	0	0.0
7/8	72	263	1	5.4	50	21.0	0	0.0	1	5.7	3	17.1	0	0.0
7/8	72	264	2	5.4	50	34.5	0	0.0	6	20.9	102	354.8	0	0.0
7/9	73	265	1	8	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
7/9	73	266	3	8	50	21.5	1	5.6	0	0.0	2	11.2	0	0.0

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Date	Tide No.	Drift No.	Station No.	Mesh Size (in)	Net Length (Fathoms)	Fishing Time (min)	Chinook		Sockeye		Chum		Coho	
							No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
7/9	73	267	2	5.4	50	11.0	0	0.0	1	10.9	15	163.6	0	0.0
7/9	73	268	3	5.4	50	9.5	0	0.0	2	25.3	19	240.0	0	0.0
7/9 <sup>c</sup>	74													
7/10	75	269	2	8	50	20.0	0	0.0	1	6.0	0	0.0	0	0.0
7/10	75	270	3	8	50	21.5	0	0.0	1	5.6	1	5.6	0	0.0
7/10	75	271	1	5.4	50	16.5	0	0.0	1	7.3	6	43.6	0	0.0
7/10	75	272	2	5.4	50	27.0	2	8.9	23	102.2	54	240.0	0	0.0
7/10	76	273	1	8	50	21.5	1	5.6	0	0.0	1	5.6	0	0.0
7/10	76	274	3	8	50	20.5	0	0.0	0	0.0	1	5.9	0	0.0
7/10	76	275	2	5.4	50	22.5	1	5.3	1	5.3	0	0.0	0	0.0
7/10	76	276	3	5.4	50	21.5	0	0.0	2	11.2	18	100.5	0	0.0
7/11	77	277	1	5.4	50	22.5	0	0.0	6	32.0	8	42.7	0	0.0
7/11	77	278	2	5.4	50	28.0	1	4.3	2	8.6	70	300.0	0	0.0
7/11	78	279	3	5.4	50	22.0	0	0.0	0	0.0	14	76.4	0	0.0
7/11	78	280	2	5.4	50	21.0	0	0.0	0	0.0	5	28.6	0	0.0
7/12	79	281	3	5.4	50	24.5	0	0.0	5	24.5	23	112.7	0	0.0
7/12	79	282	1	5.4	50	13.5	1	8.9	4	35.6	12	106.7	0	0.0
7/12	80	283	2	5.4	50	21.5	0	0.0	1	5.6	6	33.5	0	0.0
7/12	80	284	3	5.4	50	21.5	0	0.0	1	5.6	8	44.7	0	0.0
7/13	81	285	2	5.4	50	36.5	0	0.0	2	6.6	118	387.9	0	0.0
7/13	81	286	1	5.4	50	10.0	0	0.0	1	12.0	10	120.0	0	0.0
7/13	82	287	2	5.4	50	22.0	0	0.0	3	16.4	8	43.6	0	0.0
7/13	82	288	3	5.4	50	23.5	1	5.1	4	20.4	8	40.9	0	0.0
7/14	83	289	2	5.4	50	32.5	0	0.0	3	11.1	89	328.6	0	0.0
7/14	83	290	3	5.4	50	13.5	0	0.0	1	8.9	10	88.9	0	0.0
7/14	84	291	1	5.4	50	26.5	1	4.5	12	54.3	37	167.5	0	0.0
7/14	84	292	3	5.4	50	22.5	0	0.0	6	32.0	13	69.3	0	0.0
7/15	85	293	1	5.4	50	23.5	0	0.0	57	291.1	7	35.7	0	0.0
7/15	85	294	2	5.4	50	30.0	1	4.0	5	20.0	64	256.0	0	0.0
7/15	86	295	1	5.4	50	14.0	0	0.0	6	51.4	41	351.4	0	0.0
7/15	86	296	2	5.4	50	25.0	0	0.0	4	19.2	22	105.6	0	0.0
7/16	87	297	3	5.4	50	22.0	0	0.0	0	0.0	15	81.8	0	0.0
7/16	87	298	2	5.4	50	22.0	0	0.0	3	16.4	9	49.1	1	5.5
7/16	88	299	3	5.4	50	21.0	0	0.0	1	5.7	2	11.4	0	0.0
7/16	88	300	1	5.4	50	24.0	1	5.0	5	25.0	21	105.0	0	0.0
7/17	89	301	3	5.4	50	26.5	0	0.0	7	31.7	19	86.0	0	0.0
7/17	89	302	1	5.4	50	21.5	1	5.6	11	61.4	6	33.5	0	0.0
7/17 <sup>c</sup>	90													
7/18	91	303	2	5.4	50	22.0	0	0.0	1	5.5	2	10.9	0	0.0
7/18	91	304	3	5.4	50	24.0	0	0.0	3	15.0	29	145.0	0	0.0
7/18	92	305	2	5.4	50	23.0	0	0.0	4	20.9	18	93.9	0	0.0
7/18	92	306	3	5.4	50	18.5	0	0.0	4	25.9	7	45.4	0	0.0
7/19 <sup>c</sup>	93													
7/19	94	307	2	5.4	50	21.5	0	0.0	2	11.2	20	111.6	0	0.0
7/19	94	308	1	5.4	50	22.5	0	0.0	4	21.3	29	154.7	1	5.3
7/19	94	309	2	5.4	50	21.0	0	0.0	0	0.0	13	74.3	0	0.0
7/20	95	310	3	5.4	50	21.0	0	0.0	0	0.0	5	28.6	1	5.7
7/20	95	311	2	5.4	50	21.0	0	0.0	2	11.4	6	34.3	0	0.0
7/20	95	312	3	5.4	50	23.5	0	0.0	1	5.1	8	40.9	0	0.0
7/21	96	313	2	5.4	50	23.0	0	0.0	1	5.2	30	156.5	0	0.0
7/21	96	314	1	5.4	50	22.0	0	0.0	2	10.9	12	65.5	0	0.0
7/21	96	315	2	5.4	50	20.0	0	0.0	1	6.0	11	66.0	0	0.0
7/21	97	316	1	5.4	50	21.0	0	0.0	2	11.4	11	62.9	1	5.7
7/21	97	317	3	5.4	50	22.5	0	0.0	0	0.0	8	42.7	0	0.0
7/21	97	318	1	5.4	50	21.5	0	0.0	1	5.6	10	55.8	2	11.2

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Date	Tide No.	Drift No.	Station No.	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
				Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
7/22	98	319	3	5.4	50	22.0	0	0.0	0	0.0	6	32.7	1	5.5
7/22	98	320	2	5.4	50	22.0	0	0.0	0	0.0	9	49.1	0	0.0
7/22	98	321	3	5.4	50	24.0	0	0.0	0	0.0	13	65.0	2	10.0
7/22	99	322	1	5.4	50	21.5	0	0.0	0	0.0	3	16.7	1	5.6
7/22	99	323	3	5.4	50	22.0	0	0.0	0	0.0	10	54.5	0	0.0
7/22	99	324	1	5.4	50	21.0	0	0.0	1	5.7	0	0.0	5	28.6
7/23	100	325	2	5.4	50	22.0	0	0.0	0	0.0	23	125.5	1	5.5
7/23	100	326	1	5.4	50	21.0	0	0.0	1	5.7	4	22.9	0	0.0
7/23	100	327	2	5.4	50	24.0	0	0.0	0	0.0	20	100.0	1	5.0
7/23	101	328	3	5.4	50	21.0	0	0.0	0	0.0	3	17.1	0	0.0
7/23	101	329	2	5.4	50	23.0	0	0.0	0	0.0	11	57.4	2	10.4
7/23	101	330	3	5.4	50	22.5	0	0.0	0	0.0	10	53.3	2	10.7
7/24 <sup>c</sup>	102													
7/24	103	331	2	5.4	50	22.5	0	0.0	0	0.0	14	74.7	0	0.0
7/24	103	332	1	5.4	50	25.0	0	0.0	2	9.6	6	28.8	5	24.0
7/24	103	333	2	5.4	50	25.5	1	4.7	0	0.0	13	61.2	8	37.6
7/25 <sup>c</sup>	104													
7/25	105	334	1	5.4	50	20.5	0	0.0	0	0.0	1	5.9	0	0.0
7/25	105	335	3	5.4	50	22.0	0	0.0	0	0.0	9	49.1	3	16.4
7/25	105	336	1	5.4	50	21.5	1	5.6	0	0.0	2	11.2	0	0.0
7/26	106	337	3	5.4	50	22.0	0	0.0	1	5.5	17	92.7	3	16.4
7/26	106	338	2	5.4	50	20.5	0	0.0	0	0.0	1	5.9	1	5.9
7/26	106	339	3	5.4	50	21.5	0	0.0	0	0.0	2	11.2	4	22.3
7/26	107	340	1	5.4	50	21.5	0	0.0	1	5.6	2	11.2	0	0.0
7/26	107	341	3	5.4	50	22.5	1	5.3	1	5.3	18	96.0	2	10.7
7/26	107	342	1	5.4	50	21.0	0	0.0	0	0.0	2	11.4	3	17.1
7/27	108	343	2	5.4	50	20.5	0	0.0	0	0.0	2	11.7	2	11.7
7/27	108	344	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	1	5.7
7/27	108	345	2	5.4	50	19.0	0	0.0	0	0.0	13	82.1	2	12.6
7/27	109	346	3	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
7/27	109	347	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
7/27	109	348	3	5.4	50	22.0	0	0.0	2	10.9	2	10.9	5	27.3
7/28	110	349	1	5.4	50	20.5	0	0.0	0	0.0	5	29.3	1	5.9
7/28	110	350	3	5.4	50	21.5	0	0.0	1	5.6	9	50.2	8	44.7
7/28	110	351	1	5.4	50	22.0	0	0.0	0	0.0	10	54.5	10	54.5
7/28	111	352	2	5.4	50	21.0	0	0.0	0	0.0	4	22.9	1	5.7
7/28	111	353	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	3	17.6
7/28	111	354	2	5.4	50	21.0	0	0.0	0	0.0	1	5.7	2	11.4
7/29	112	355	3	5.4	50	25.5	0	0.0	0	0.0	26	122.4	13	61.2
7/29	112	356	2	5.4	50	21.0	0	0.0	0	0.0	4	22.9	3	17.1
7/29	112	357	3	5.4	50	21.0	0	0.0	0	0.0	3	17.1	5	28.6
7/29	113	358	3	5.4	50	20.0	0	0.0	0	0.0	1	6.0	0	0.0
7/29	113	359	2	5.4	50	21.5	0	0.0	1	5.6	12	67.0	9	50.2
7/29	113	360	3	5.4	50	21.0	0	0.0	0	0.0	5	28.6	3	17.1
7/30	114	361	1	5.4	50	24.0	0	0.0	1	5.0	9	45.0	26	130.0
7/30	114	362	3	5.4	50	20.5	0	0.0	0	0.0	1	5.9	4	23.4
7/30	114	363	1	5.4	50	21.5	0	0.0	0	0.0	1	5.6	16	89.3
7/30	115	364	2	5.4	50	21.5	0	0.0	0	0.0	7	39.1	15	83.7
7/30	115	365	1	5.4	50	20.5	0	0.0	0	0.0	2	11.7	3	17.6
7/30	115	366	2	5.4	50	21.0	0	0	0	0	0	0	16	91
7/31	116	367	3	5.4	50	21.0	0	0.0	0	0.0	1	5.7	8	45.7
7/31	116	368	2	5.4	50	21.5	0	0.0	0	0.0	2	11.2	7	39.1
7/31	116	369	3	5.4	50	21.5	0	0.0	0	0.0	1	5.6	7	39.1
7/31	117	370	1	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
7/31	117	371	3	5.4	50	19.0	0	0.0	0	0.0	1	6.3	3	18.9

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Date	Tide	Drift	Station	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
	No.	No.	No.	Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
7/31	117	372	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
8/1	118	373	2	5.4	50	21.0	0	0.0	0	0.0	1	5.7	6	34.3
8/1	118	374	1	5.4	50	20.5	0	0.0	0	0.0	1	5.9	0	0.0
8/1	118	375	2	5.4	50	20.5	0	0.0	0	0.0	1	5.9	7	41.0
8/1	119	376	3	5.4	50	21.0	0	0.0	0	0.0	3	17.1	15	85.7
8/1	119	377	2	5.4	50	20.5	0	0.0	0	0.0	1	5.9	1	5.9
8/1	119	378	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	6	34.3
8/2	120	379	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	2	11.7
8/2	120	380	3	5.4	50	21.5	0	0.0	0	0.0	4	22.3	3	16.7
8/2	120	381	1	5.4	50	21.0	1	5.7	0	0.0	0	0.0	1	5.7
8/2	121	382	2	5.4	50	20.0	0	0.0	0	0.0	1	6.0	6	36.0
8/2	121	383	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	4	23.4
8/2	121	384	2	5.4	50	20.5	0	0.0	0	0.0	2	11.7	6	35.1
8/3	122	385	3	5.4	50	20.5	0	0.0	0	0.0	8	46.8	2	11.7
8/3 <sup>f</sup>	122	386	2	5.4	50	0	0	0	0	0	0	0	0	0
8/3 <sup>f</sup>	122	387	3	5.4	50	0	0	0	0	0	0	0	0	0
8/3	123	388	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	1	5.7
8/3	123	389	3	5.4	50	26.0	0	0.0	0	0.0	1	4.6	22	101.5
8/3	123	390	1	5.4	50	21.5	0	0.0	0	0.0	0	0.0	1	5.6
8/4 <sup>d</sup>	124													
8/4	125	391	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	1	5.7
8/4	125	392	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	1	5.7
8/4	125	393	3	5.4	50	20.0	0	0.0	0	0.0	0	0.0	2	12.0
8/5	126	394	3	5.4	50	23.0	0	0.0	0	0.0	1	5.2	24	125.2
8/5	126	395	2	5.4	50	21.0	0	0.0	0	0.0	1	5.7	8	45.7
8/5	126	396	3	5.4	50	23.0	0	0.0	0	0.0	4	20.9	13	67.8
8/6	127	397	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/6	127	398	1	5.4	50	22.5	0	0.0	0	0.0	1	5.3	28	149.3
8/6	127	399	2	5.4	50	21.0	0	0.0	0	0.0	3	17.1	6	34.3
8/6	128	400	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	2	11.7
8/6	128	401	2	5.4	50	22.0	0	0.0	0	0.0	0	0.0	12	65.5
8/6	128	402	3	5.4	50	20.5	0	0.0	0	0.0	1	5.9	1	5.9
8/7	129	403	1	5.4	50	21.5	0	0.0	0	0.0	0	0.0	1	5.6
8/7	129	404	3	5.4	50	28.0	0	0.0	0	0.0	1	4.3	95	407.1
8/7	129	405	1	5.4	50	23.0	0	0.0	0	0.0	1	5.2	17	88.7
8/7	130	406	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	5	29.3
8/7	130	407	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	5	29.3
8/7	130	408	2	5.4	50	23.0	0	0.0	0	0.0	2	10.4	12	62.6
8/8	131	409	3	5.4	50	3.5	0	0.0	0	0.0	0	0.0	9	308.6
8/8	131	410	2	5.4	50	20.5	0	0.0	0	0.0	1	5.9	18	105.4
8/8	131	411	3	5.4	50	25.0	0	0.0	0	0.0	0	0.0	32	153.6
8/8	132	412	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	3	17.6
8/8	132	413	2	5.4	50	21.5	0	0.0	0	0.0	0	0.0	4	22.3
8/8	132	414	3	5.4	50	23.0	0	0.0	0	0.0	1	5.2	16	83.5
8/9	133	415	2	5.4	50	21.0	0	0.0	0	0.0	2	11.4	8	45.7
8/9	133	416	3	5.4	50	21.5	0	0.0	0	0.0	0	0.0	21	117.2
8/9	133	417	1	5.4	50	19.0	0	0.0	1	6.3	0	0.0	16	101.1
8/9	134	418	3	5.4	50	24.5	0	0.0	0	0.0	0	0.0	15	73.5
8/9 <sup>g</sup>	134	419	1	5.4	50	0	0	0	0	0	0	0	0	0
8/9 <sup>g</sup>	134	420	2	5.4	50	0	0	0	0	0	0	0	0	0
8/10	135	421	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	12	68.6
8/10	135	422	2	5.4	50	21.5	0	0.0	0	0.0	0	0.0	20	111.6
8/10	135	423	3	5.4	50	23.5	0	0.0	0	0.0	0	0.0	40	204.3
8/10	136	424	2	5.4	50	23.5	0	0.0	0	0.0	3	15.3	41	209.4
8/10	136	425	3	5.4	50	23.0	0	0.0	0	0.0	0	0.0	14	73.0

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Appendix A1.–Page 9 of 10.

Date	Tide	Drift No.	Station No.	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
	No.			Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE	No. Caught	CPUE
8/10	136	426	1	5.4	50	12.0	0	0.0	0	0.0	1	10.0	7	70.0
8/11	137	427	1	5.4	50	21.5	0	0.0	0	0.0	0	0.0	7	39.1
8/11	137	428	2	5.4	50	21.5	0	0.0	0	0.0	0	0.0	8	44.7
8/11	137	429	3	5.4	50	24.5	0	0.0	0	0.0	0	0.0	37	181.2
8/11	138	430	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	4	23.4
8/11	138	431	2	5.4	50	22.0	0	0.0	0	0.0	0	0.0	9	49.1
8/11	138	432	3	5.4	50	23.0	0	0.0	0	0.0	1	5.2	19	99.1
8/12	139	433	2	5.4	50	22.0	0	0.0	0	0.0	0	0.0	13	70.9
8/12	139	434	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	4	22.9
8/12	139	435	1	5.4	50	21.5	0	0.0	0	0.0	0	0.0	7	39.1
8/12	140	436	3	5.4	50	19.0	0	0.0	0	0.0	1	6.3	7	44.2
8/12	140	437	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	5	29.3
8/12	140	438	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/13	141	439	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/13	141	440	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/13	141	441	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/13	142	442	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/13	142	443	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	3	17.1
8/13	142	444	1	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/14	143	445	3	5.4	50	22.5	0	0.0	0	0.0	0	0.0	0	0.0
8/14 <sup>a</sup>	143	446	1	5.4	50		0		0		0		0	
8/14 <sup>a</sup>	143	447	2	5.4	50		0		0		0		0	
8/14	144	448	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	10	57.1
8/14	144	449	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	3	17.1
8/14	144	450	3	5.4	50	21.0	0	0.0	0	0.0	2	11.4	2	11.4
8/15	145	451	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/15	145	452	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
8/15 <sup>g</sup>	145	453	1	5.4	50		0		0		0		0	
8/15 <sup>h</sup>	146													
8/16	147	454	1	5.4	50	20.0	0	0.0	0	0.0	0	0.0	1	6.0
8/16	147	455	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/16	147	456	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/16	148	457	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	4	23.4
8/16	148	458	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/16	148	459	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/17	149	460	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/17	149	461	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/17	149	462	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/17 <sup>i</sup>	150													
8/18	151	463	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/18	151	464	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/18	151	465	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/19	152	466	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/19	152	467	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	2	11.4
8/19	152	468	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/19	153	469	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	2	11.4
8/19	153	470	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	4	24.0
8/19	153	471	3	5.4	50	21.5	0	0.0	0	0.0	0	0.0	10	55.8
8/20 <sup>h</sup>	154													
8/20	155	472	2	5.4	50	21.0	0	0.0	0	0.0	0	0.0	5	28.6
8/20	155	473	3	5.4	50	21.0	0	0.0	0	0.0	0	0.0	8	45.7
8/20	155	474	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	2	11.4
8/21	156	475	3	5.4	50	20.0	0	0.0	0	0.0	0	0.0	1	6.0
8/21	156	476	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	2	11.7
8/21	156	477	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0

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Date	Tide No.	Drift No.	Station No.	Mesh	Net	Fishing	Chinook		Sockeye		Chum		Coho	
				Size (in)	Length (Fathoms)	Time (min)	No. Caught	CPUE						
8/21	157	478	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/21	157	479	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	2	11.7
8/21	157	480	3	5.4	50	21.5	0	0.0	0	0.0	0	0.0	10	55.8
8/22	158	481	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/22	158	482	3	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/22	158	483	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/22	159	484	3	5.4	50	20.0	0	0.0	0	0.0	0	0.0	1	6.0
8/22	159	485	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/22	159	486	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/23	160	487	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/23	160	488	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/23	160	489	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/23	161	490	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/23	161	491	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	2	11.7
8/23	161	492	1	5.4	50	21.0	0	0.0	0	0.0	0	0.0	0	0.0
8/24	162	493	3	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/24	162	494	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/24	162	495	2	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
8/24	163	496	1	5.4	50	20.5	0	0.0	0	0.0	0	0.0	1	5.9
8/24	163	497	2	5.4	50	20.0	0	0.0	0	0.0	0	0.0	0	0.0
8/24	163	498	3	5.4	50	20.5	0	0.0	0	0.0	0	0.0	0	0.0
Totals	163	498				292			495		2,872		1,020	

- <sup>a</sup> Drift unsuccessful due to snagged net, no data.
- <sup>b</sup> Tide missed due to scheduled staff training, no data.
- <sup>c</sup> Tide missed due to equipment maintenance, no data.
- <sup>d</sup> Tide missed due to commercial fishing in Subdistrict W1-A, no data.
- <sup>e</sup> Tide missed due to observance of holiday, no data.
- <sup>f</sup> Drift missed due to mechanical problems, no data.
- <sup>g</sup> Drift missed due to unfavorable weather conditions, no data.
- <sup>h</sup> Tide missed due to unfavorable weather conditions, no data.
- <sup>i</sup> Tide missed due to mechanical problems, no data.



**APPENDIX B:**  
**WATER LEVEL, TEMPERATURE AND CLARITY**

Appendix B1.—Historical river stage (in feet) of the Kuskokwim River at Crooked Creek, 2000 through 2010, at 6:00 a.m.

Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2000-2009 Summary		
												Ave.	Min.	Max.
6/01	5.5	10.8	10.0 <sup>a</sup>	4.9	9.4	8.7	10.2	4.5	8.0	8.5	4.6	8.1	4.5	10.8
6/02	5.5	10.5	10.0 <sup>a</sup>	5.3	9.4	8.2	10.5	4.3	7.7	8.4	4.7	8.0	4.3	10.5
6/03	5.6	10.5	10.0 <sup>a</sup>	7.4	9.1	7.8	10.5	4.1	7.4	8.0	4.8	8.0	4.1	10.5
6/04	5.7	10.5	10.0 <sup>a</sup>	7.9	8.7	7.7	10.4	4.2	7.2	7.7	4.9	8.0	4.2	10.5
6/05	5.8	10.5	10.0	8.2	8.5	7.4	10.1	4.2	7.0	7.6	4.5	7.9	4.2	10.5
6/06	5.8	10.6	9.8	8.0	8.0	6.9	9.5	4.0	7.0 <sup>a</sup>	7.4	5.1	7.7	4.0	10.6
6/07	5.7	10.6	9.6	7.8	7.7	6.7	8.6	3.9	7.3	7.4	5.2	7.5	3.9	10.6
6/08	5.7	10.9	9.6	7.4	7.4	6.4	7.8	3.8	6.8	7.1	5.0	7.3	3.8	10.9
6/09	5.8	11.0	9.6	7.1	7.3	6.2	7.0	4.0	6.7	7.0	4.7	7.2	4.0	11.0
6/10	5.9	10.9	9.5	6.7	7.3	6.2	6.7	3.9	6.6	7.0	4.5	7.1	3.9	10.9
6/11	6.4	10.8	9.1	6.5	7.4	6.1	6.3	3.7	6.5	6.9	4.5	7.0	3.7	10.8
6/12	6.5	10.7	8.7	6.7	7.4	6.2	6.1	3.6	6.4	6.6	4.7	6.9	3.6	10.7
6/13	6.4	10.6	8.5	7.1	7.3	6.3	6.0	3.4	6.3	6.5	5.0	6.8	3.4	10.6
6/14	6.1	10.5	8.2	7.1	7.1	6.5	5.9	3.4	6.5	6.4	5.2	6.8	3.4	10.5
6/15	6.0	10.2	7.7	7.0	6.8	6.4	6.0	3.4 <sup>a</sup>	6.0	6.6	5.3	6.6	3.4	10.2
6/16	5.6	9.8	7.2	7.0	6.5	6.4	6.0	3.2	6.4	6.4	5.4	6.4	3.2	9.8
6/17	5.4	9.5	6.8	7.1	6.4	6.5	5.9	3.1	6.2	6.1	5.2	6.3	3.1	9.5
6/18	5.2	9.1	6.6	7.3	6.2	6.6	5.9	3.1	6.5	6.2	5.7	6.3	3.1	9.1
6/19	5.0	8.7	6.5	7.2	6.1	7.1	6.3	3.1 <sup>a</sup>	6.7	6.0	4.9	6.3	3.1	8.7
6/20	5.1	8.2	6.5	7.4	6.2	7.7	6.7	3.1 <sup>a</sup>	6.6	5.8	4.7	6.3	3.1	8.2
6/21	4.7	8.1	6.6	7.1	6.2	8.4	6.9	3.3	6.6	5.7	4.6	6.3	3.3	8.4
6/22	4.6	8.1	6.6	7.0	6.0	8.3	7.1	3.3	6.6	5.7	4.4	6.3	3.3	8.3
6/23	4.4	8.1	6.5	6.8	5.9	8.3	7.1	3.4	6.9	5.7	4.2	6.3	3.4	8.3
6/24	4.2	8.1	6.6	6.7	5.9	8.0	6.9	3.4 <sup>a</sup>	6.4	5.6	3.9	6.2	3.4	8.1
6/25	4.0	8.1	6.7	6.5	5.9	7.8	6.6	3.9	6.5	5.3	3.7	6.1	3.9	8.1
6/26	3.9	8.1	6.3	6.4	6.2	7.4	6.7	4.5	6.4	5.3	3.7	6.1	3.9	8.1
6/27	3.8	7.8	6.4	6.2	6.8	6.7	6.7 <sup>a</sup>	4.9	6.3	5.2	3.7	6.1	3.8	7.8
6/28	4.0	7.8	6.3	5.9	7.0	6.5	6.7 <sup>a</sup>	4.9 <sup>a</sup>	6.4	5.1	3.7	6.1	4.0	7.8
6/29	4.1	7.5	5.9	5.8	6.9	6.3	5.9	4.9 <sup>a</sup>	6.9	5.0	3.9	5.9	4.1	7.5
6/30	4.4	7.2	5.6	5.6	7.0	6.2	5.8	4.4	8.0	4.8	4.2	5.9	4.4	8.0
7/01	4.5	7.1	5.4	5.4	7.0	6.2	5.9	4.4 <sup>a</sup>	9.2	4.7	4.2	6.0	4.4	9.2
7/02	4.5	6.9	5.2	5.4	7.1	6.3	6.4	4.0	10.2	4.5	4.3	6.0	4.0	10.2
7/03	4.5	6.7	5.2	6.3	6.7	6.4	6.8	4.0	10.3	4.4	4.4	6.1	4.0	10.3
7/04	4.5	6.6	5.1	7.7	6.6	6.5	6.8	4.1	10.1	4.3	4.6	6.2	4.1	10.1
7/05	4.5	6.4	5.0	8.7	6.7	6.7	6.4	4.1	9.5	4.3	4.6	6.2	4.1	9.5
7/06	4.6	6.3	5.1	9.0	6.8	6.9	6.7	4.2	9.0	4.3	4.7	6.3	4.2	9.0
7/07	4.9	6.3	5.0	9.1	7.1	6.9	6.6	4.5	8.5	4.3	4.8	6.3	4.3	9.1

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Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2000-2009 Summary			
												Ave.	Min.	Max.	
7/08	4.8	6.3	4.9	9.0	6.9	6.7	6.3	4.8	8.4	4.3	4.8	6.2	4.3	9.0	
7/09	4.7	6.0	4.9	8.5	6.7	6.7	6.4	5.0	8.6	4.4	4.7	6.2	4.4	8.6	
7/10	4.7	5.7	5.0	8.0	6.4	6.5	6.6	5.1	8.5	4.6	4.5	6.1	4.6	8.5	
7/11	5.0	5.6	4.8	7.7	6.2	6.2	6.8	5.4	8.1	4.7	4.4	6.0	4.7	8.1	
7/12	5.1	5.6	4.7	7.5	6.0	6.0	6.9	5.6	7.8	4.8	4.4	6.0	4.7	7.8	
7/13	5.1	5.8	4.8	7.5	5.7	5.9	6.9	5.5	7.5	4.8	4.4	6.0	4.8	7.5	
7/14	5.0	5.9	4.5	7.5	5.5	5.7	7.0	5.8	7.2	4.9	4.4	5.9	4.5	7.5	
7/15	5.1	6.0	4.4	7.4	5.3	5.6	6.8	6.6	6.6	4.9	4.3	5.9	4.4	7.4	
7/16	5.4	6.0	4.3	7.3	5.2	5.5	6.7	7.4	6.7	4.8	4.4	5.9	4.3	7.4	
7/17	5.7	6.1	4.2	7.2	5.0	5.3	7.0	7.5	6.6	4.7	4.4	5.9	4.2	7.5	
7/18	6.0	6.2	4.2	7.2	4.9	5.3	7.0	7.4	6.5	4.6	4.5	5.9	4.2	7.4	
7/19	6.8	6.5	4.4	7.4	4.9	5.2	6.9	7.1	6.7	4.6	4.5	6.0	4.4	7.4	
7/20	7.0	6.6	4.0	7.2	4.9	5.3	6.8	7.0	6.8	4.6	4.5	6.0	4.0	7.2	
7/21	6.9	6.7	4.1	7.2	4.9	5.3	6.4	6.9	6.5	4.5	5.1	5.9	4.1	7.2	
7/22	6.7	7.2	4.1	7.2	4.9	5.2	6.1	6.7	6.4	4.3	5.6	5.9	4.1	7.2	
7/23	6.8	7.5	4.1	6.8	5.0	5.1	5.8	6.5	6.5	4.2	6.2	5.8	4.1	7.5	
7/24	6.4	7.8	4.1	6.3	5.0	5.0	5.6	6.4	6.3	4.0	6.3	5.7	4.0	7.8	
53	7/25	6.1	8.3	4.1	6.2	4.8	4.9	5.3	6.4	6.2	3.8	6.3	5.6	3.8	8.3
	7/26	6.2	8.6	4.3	6.2	4.7	4.8	5.2	6.5	6.1	3.6	6.2	5.6	3.6	8.6
	7/27	6.1	8.7	4.6	6.3	4.8	4.6	5.1	6.3	5.9	3.5	6.1	5.6	3.5	8.7
	7/28	6.1	8.9	4.7	7.1	4.7	4.7	5.1	6.3	5.7	3.4	6.2	5.7	3.4	8.9
	7/29	5.7	9.1	4.7	8.5	4.7	4.7	5.2	6.2	5.5	3.4	6.4	5.8	3.4	9.1
	7/30	5.7	8.8	4.8	10.1	4.8	4.4	4.9	6.1	5.3	3.5	6.3	5.8	3.5	10.1
	7/31	5.7	8.8	4.7	11.1	5.0	4.3	4.9	5.8	5.2	3.6	6.6	5.9	3.6	11.1
	8/01	5.8	8.9	4.8	11.7	4.8	4.3	5.4	5.6	5.2	3.9	7.6	6.0	3.9	11.7
	8/02	6.1	9.2	4.3	11.7	4.7	4.2	5.1	5.5	5.1	4.2	8.5	6.0	4.2	11.7
	8/03	6.1	8.9	4.1	11.3	4.7	4.1	5.1	5.3	4.7	4.5	8.8	5.9	4.1	11.3
	8/04	5.9	8.7	3.9	11.3	4.7	4.1	5.2	5.4	5.1	4.6	8.8	5.9	3.9	11.3
	8/05	6.1	8.6	3.7	10.4	4.7	4.1	5.4	5.4	4.8	4.6	8.5	5.8	3.7	10.4
	8/06	6.6	8.1	3.7	9.9	4.8	4.0	5.3	6.2	5.2	4.6	8.1	5.8	3.7	9.9
	8/07	6.4	7.7	3.8	9.3	5.0	3.9	4.9	7.9	5.4	4.5	8.5	5.9	3.8	9.3
	8/08	6.6	7.3	4.1	8.8	5.0	3.7	4.8	9.5	5.3	4.4	8.7	6.0	3.7	9.5
	8/09	6.6	6.8	4.9	8.6	5.1	3.6	4.7	9.7	5.1	4.3	8.8	5.9	3.6	9.7
	8/10	6.5	6.4	5.6	9.0	4.9	3.5	4.6	10.0	4.9	4.1	9.2	5.9	3.5	10.0

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Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2000-2009 Summary		
												Ave.	Min.	Max.
8/11	6.5	6.2	5.6	9.2	4.8	3.4	4.7	9.7	4.7	3.9	9.5	5.9	3.4	9.7
8/12	6.1	5.9	5.6	9.1	4.6	3.4	4.6	9.3	4.1	3.8	9.6	5.7	3.4	9.3
8/13	5.9	5.7	5.7		4.7	3.4	5.5	8.8	4.3	3.7	9.8	5.3	3.4	8.8
8/14	6.0	5.6	5.6		4.6	3.4	6.0	8.5	3.5	3.6	9.8	5.2	3.4	8.5
8/15	6.4	5.8	5.5	8.7	4.5	3.5	6.7	8.4	3.6	3.5	9.8	5.7	3.5	8.7
8/16	7.3	6.4	5.3	9.1	4.3	3.6	7.1	8.2	3.4	3.6	9.5	5.8	3.4	9.1
8/17	7.1	6.4	4.7	9.5	4.3	3.6	7.9	8.4	3.3	3.8	9.5	5.9	3.3	9.5
8/18	7.5	7.7	4.5	9.8	4.2	3.6	8.7	8.6	3.4	4.1	9.8	6.2	3.4	9.8
8/19	8.0	8.5	4.2	9.7	4.3	3.7	9.5	8.3	3.6	4.1	10.4	6.4	3.6	9.7
8/20	8.0	9.6	4.2	9.3	4.0	3.7	11.3	8.2	3.6	4.0	10.8	6.6	3.6	11.3
8/21	7.8	10.6	3.8	9.1	3.9	3.7	12.9	7.9	3.6	4.2	10.8	6.7	3.6	12.9
8/22	7.5	11.1	4.0	8.8	3.9	3.5	13.1	7.6	3.5	4.2	10.4	6.7	3.5	13.1
8/23	7.3	11.0	4.5	8.4	3.9	3.7	13.0	7.5	3.5	3.9	10.0	6.7	3.5	13.0
8/24	6.3	11.1	5.2	7.8	3.8	4.1	12.8	7.1	3.5	3.7	9.4	6.5	3.5	12.8
Ave.	5.7	8.1	5.8	7.8	5.8	5.6	6.9	5.7	6.3	5.0	6.1	6.3	5.0	8.1
Min.	3.8	5.6	3.7	4.9	3.8	3.4	4.6	3.1	3.3	3.4	3.7	4.0	3.1	5.6
Max.	8.0	11.1	10.0	11.7	9.4	8.7	13.1	10.0	10.3	8.5	10.8	10.1	8.0	13.1

Source: U.S. Geological Survey, [http://ak.waterdata.usgs.gov/nwis/uv/?site\\_no=15304000&PARAmeter\\_cd=00065,00060](http://ak.waterdata.usgs.gov/nwis/uv/?site_no=15304000&PARAmeter_cd=00065,00060)

Note: Blanks indicate missing data.

<sup>a</sup> Indicates an estimate.

Appendix B2.—Historic daily surface water temperature of the Kuskokwim River at the Bethel test fish site, 2000–2010.

Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2000-2009 Summary		
												Ave.	Min.	Max.
6/1		9		13	14	16	12			10	13	12	9	16
6/2		9	10	12	12	12	12		12	10	12	11	9	12
6/3		10	16	12	12	13	11		11	10	12	12	10	16
6/4		11	11	11	12	13	11		11	10	12	11	10	13
6/5	9	11	9	11	13	10	10		11	10	13	10	9	13
6/6	10	11	10	11	14	12	12		10	10	13	11	10	14
6/7	11	12	10	10	14	11	11		11	10	13	11	10	14
6/8	11	11	9	12	14	11	10	11	11	10	13	11	9	14
6/9	13	11	9	12	14	13	10	11	11	10	13	11	9	14
6/10	13	11	7	10	14	14	11	11	11	11	12	11	7	14
6/11	12	10	9	11	13	11	10	12	11	12	14	11	9	13
6/12	13	10	11	12	14	12	10	13	10	13	12	12	10	14
6/13	13	10	10	12	15	12	9	13	11	14	9	12	9	15
6/14	13	10	14	12	15	12	10	13	12	14	10	12	10	15
6/15	13	10	15	14	14	13	11	12	12	14	9	13	10	15
6/16	13	10	19	14	15	13	12	13		14	11	14	10	19
6/17	13	11	16	16	14	13	13	12	13	15	11	14	11	16
6/18	13	13	10	15	15	13	13	12	12	14	11	13	10	15
6/19	13	15	11	15	14	16	14	12	12	14	12	13	11	16
6/20	13	14	10	14		14	15	14	12	14	12	13	10	15
6/21	13	15	12	13	15	15	14	13	12	14	12	13	12	15
6/22	14	16	10	15	20	16	15	13	13	13	15	14	10	20
6/23	15	16	12	15	21	16	14	14	13	14	15	15	12	21
6/24	16	15	15	11	19	16		13	13	12	13	14	11	19
6/25	17	14	15	11		16	14	14	14	12	15	14	11	17
6/26	18	14	15	13	15	17	15	14		13	16	15	13	18
6/27	17	13	15	13		18	15	14	14	13	14	15	13	18
6/28	16	14	15	15	17	18		13			15	15	13	18
6/29	16	14	15	14	17	17		14	13	12	14	15	12	17
6/30	15	15	15	15		17	14	14	13	14	15	15	13	17
7/1	15	13	15	14	18	17	13		14	13	15	15	13	18
7/2	16	12	15		18	17	14	14	14	17	16	15	12	18
7/3	14	13		12	18		14	14	13		16	14	12	18
7/4	16	13	14		17				13			15	13	17
7/5	16	12		15	17		16	14	13		15	15	12	17
7/6	17	12		14		19	16	16	15	16	15	15	12	19
7/7	16	13		15	16	19	15		14	16	15	15	13	19
7/8	16	13	13		17	18	17	16	14	16	15	16	13	18
7/9	16	13	14	15	18		17	17		17	15	16	13	18
7/10	16	14	14	15	18	12	17	16	14	17	15	15	12	18
7/11	15	12	14	15	17	16	16		15	18	16	15	12	18
7/12	16	12	15	15	19		18	18	14	17	15	16	12	19
7/13	17	12	15	17	18		20	17	14	19	15	16	12	20
7/14	17	13	16	16		15	19	16	12	17	16	16	12	19
7/15	16	13	15	17	19	14	15	13	11	18	16	15	11	19
7/16	15	13	16	15	19	14	14	15	12	17	15	15	12	19
7/17	14	12	16	15		17	15	15	11	17	15	15	11	17
7/18	14	12	16			17	14	15	12	16	15	14	12	17
7/19	13	12	17		18	16	16		16	15		15	12	18
7/20	13	13	16		24	14	15	15	12	14	14	15	12	24
7/21	13	13	17	15	18	15	15	15	12	15	13	15	12	18
7/22	14		17	17	19		18	14	12	15	14	16	12	19
7/23	14		17	16	19		16	14	12	15	14	15	12	19
7/24	14		17	15	17		17	14	13	15	13	15	13	17
7/25	14		16	15	18		16	15	13	16	13	15	13	18

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Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2000-2009 Summary		
												Ave.	Min.	Max.
7/26	13		15	16	17	18	16	15	12	15	13	15	12	18
7/27			15	14	17	18	16	16	13	14	13	15	13	18
7/28		16	15		17	17		16	12	14	13	15	12	17
7/29		15	15	15	14	18	14	16	12	14	13	15	12	18
7/30		14	15		17	18	14	15	14	14	13	15	14	18
7/31			15	15	19	17	13	15	14	13	13	15	13	19
8/1			16	14	13	16	14	15	13	13	14	14	13	16
8/2			17	13	16	17	14	14	13	13	14	15	13	17
8/3			17	13	12	17		15	13	13	14	14	12	17
8/4		13	18	12	16	17	14	14	14	14	14	15	12	18
8/5		14	17	13	16	16	14	14	14	13	14	15	13	17
8/6		13	17	14	16	16	14	14	14	13	14	14	13	17
8/7		13	15		16	15	13	14	14	14	13	14	13	16
8/8		13			16	16	14	14	14	15	13	14	13	16
8/9			14	15		16	13	14	14	15	13	14	13	16
8/10			15	15		16	14	14	14	12	12	14	12	16
8/11			15	15	16	18	15	14	14	12	12	15	12	18
8/12			15	15	16	18	13	14	15	15	11	15	13	18
8/13			14	15	16	19	13		15	9	12	14	9	19
8/14			14	15	16	19	13	14	14	10	12	14	10	19
8/15			13	14	17	19	14		14	15	12	15	13	19
8/16			13	13	18	18	13	15	14	10	12	14	10	18
8/17			13	12	17	18		15	14	10	12	14	10	18
8/18			13	11	17	17	13	14	14	13	12	14	11	17
8/19			12	13	19	17	12	15	14	13	11	14	12	19
8/20			12	11	19	16	13	14	14	13	12	14	11	19
8/21			11		18	14	12	14	14	13	12	14	11	18
8/22			11	12	17	14		14	14	12	12	13	11	17
8/23				11	17	12		13	14	12	11	13	11	17
8/24				12	17			13	14		12	14	12	17
Ave.	14	12	14	14	16	15	14	14	13	13	13	14	12	16
Min.	9	9	7	10	12	10	9	11	10	9	9	10	7	12
Max.	18	16	19	17	24	19	20	18	15	19	16	18	15	24

*Note:* Value entered was lowest value for that day. Blanks indicate missing data.

Appendix B3.—Historic daily water clarity measurements of the Kuskokwim River at the Bethel test fish site, 2000–2010.

Date	2000-2009 Summary													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Ave.	Min.	Max.
6/1		0.3	0.3	0.8	0.5	0.5	0.36	0.9		0.5	0.5	0.5	0.3	0.9
6/2		0.2	0.3	0.9	0.4	0.4	0.33	0.8	0.5	0.5	0.4	0.5	0.2	0.9
6/3		0.3	0.2	0.6	0.4	0.4	0.4	0.7	0.7	0.5	0.5	0.5	0.2	0.7
6/4		0.3	0.3	0.4	0.4	0.5	0.4	0.9	0.6	0.6	0.5	0.5	0.3	0.9
6/5	0.9	0.5	0.3	0.6	0.3	0.5	0.3	0.8	0.7	0.4	0.5	0.5	0.3	0.9
6/6	0.7	0.4	0.3	0.3	0.2	0.5	0.4	0.8	0.7	0.4	0.6	0.5	0.2	0.8
6/7	0.8	0.4	0.3	0.5	0.4	0.6	0.3	0.9	0.7	0.5	0.7	0.5	0.3	0.9
6/8	0.9	0.3	0.3	0.6	0.4	0.5	0.5	1.0	0.8	0.4	0.7	0.6	0.3	1.0
6/9	0.8	0.5	0.3	0.6	0.5	0.5	0.4	1.0	0.7	0.7	0.7	0.6	0.3	1.0
6/10	0.7	0.3	0.3	0.5	0.5	0.6	0.4	1.0	0.7	0.5	0.7	0.6	0.3	1.0
6/11	0.7	0.3	0.3	0.7	0.4	0.6	0.3	1.0	0.7	0.7	0.7	0.6	0.3	1.0
6/12	0.5	0.3	0.4	0.4	0.5	0.5	0.4	0.9	0.7	0.6	0.6	0.5	0.3	0.9
6/13	0.7	0.3	0.4	0.7	0.4	0.5	0.4	0.8	0.8	0.8	0.7	0.6	0.3	0.8
6/14	0.8	0.4	0.3	1.0	0.6	0.6	0.5	1.0	1.1	0.9	0.6	0.7	0.3	1.1
6/15	0.7	0.3	0.4	0.8	0.9	0.6	0.4	1.2	0.6	0.7	0.4	0.7	0.3	1.2
6/16	0.6	0.4	0.4	0.7	0.6	0.6	0.4	1.1	0.8	0.7	0.5	0.6	0.4	1.1
6/17	0.6	0.3	0.4	0.7	0.4	0.6	0.4	1.1	0.9	0.6	0.6	0.6	0.3	1.1
6/18	0.7	0.4	0.4	0.6	0.4	0.6	0.5	1.1	0.9	0.6	0.5	0.6	0.4	1.1
6/19	0.6	0.5	0.5	0.5	0.3	0.5	0.5	1.0	0.7	0.5	0.5	0.6	0.3	1.0
6/20	0.6	0.4	0.6	0.5		0.7	0.6	1.0	0.7	0.5	0.5	0.6	0.4	1.0
6/21	0.5	0.4	0.8	0.3	0.4	0.7	0.5	1.2	0.7	0.5	0.5	0.6	0.3	1.2
6/22	0.5	0.4	0.8	0.2	0.6	0.3	0.7	1.2	0.7	0.5	0.6	0.6	0.2	1.2
6/23	0.6	0.4	0.7	0.2	0.6	0.2	0.6	1.3	0.8	0.4	0.6	0.6	0.2	1.3
6/24	0.6	0.4	0.6	0.2	0.6	0.2		1.0	0.9	0.4	0.8	0.5	0.2	1.0
6/25	0.6	0.4	0.5	0.3		0.2	0.7	1.1	0.7	0.5	0.8	0.5	0.2	1.1
6/26	0.6	0.3	0.5	0.3	0.6	0.2	0.6	0.7	0.4	0.4	0.8	0.4	0.2	0.7
6/27	0.6	0.3	0.4	0.3	0.6	0.2	0.4	1.0	0.4	0.4	0.7	0.5	0.2	1.0
6/28	0.8	0.3	0.3	0.3		0.1		0.9		0.4	0.9	0.4	0.1	0.9
6/29	0.9	0.2	0.3	0.3	0.4	0.1		0.7	0.5	0.5	0.9	0.4	0.1	0.9
6/30	1.0	0.2	0.2	0.3			0.6	0.7	0.3	0.6	1.2	0.5	0.2	1.0
7/1	1.1	0.2	0.2	0.3	0.3	0.2	0.4		0.4	0.5	1.2	0.4	0.2	1.1
7/2	1.0	0.2	0.3		0.3	0.2	0.5	0.5	0.4		1.0	0.4	0.2	1.0
7/3	1.0	0.2		0.3	0.2		0.5	0.5	0.4		1.1	0.4	0.2	1.0
7/4	1.0	0.2	0.2	0.3	0.2							0.4	0.2	1.0
7/5	0.8	0.2		0.3	0.2		0.5	0.5	0.4		0.8	0.4	0.2	0.8
7/6	0.6	0.2		0.2		0.3	0.4	0.5	0.3	0.7	0.8	0.4	0.2	0.7
7/7	0.5	0.2		0.3	0.2	0.3	0.5		0.4	1.0	0.7	0.4	0.2	1.0
7/8	0.5	0.3	0.5		0.2	0.2	0.4	0.5	0.5	1.0	0.7	0.4	0.2	1.0
7/9	0.5	0.2	0.5	0.3	0.1		0.4	0.5		1.2		0.1	0.2	1.2
7/10	0.3	0.2	0.5	0.2	0.1	0.3	0.3	0.8	0.5	1.2	0.4	0.4	0.1	1.2
7/11	0.3	0.2	0.5	0.1	0.2	0.2	0.3		0.6	1.0	0.6	0.4	0.1	1.0
7/12	0.4	0.3	0.4	0.1	0.2		0.2	0.6	0.6	0.9	0.3	0.4	0.1	0.9
7/13	0.5	0.2	0.4	0.2	0.2		0.3	0.6	0.5	1.0	0.4	0.4	0.2	1.0
7/14	0.4	0.2	0.3	0.1		0.2	0.3	0.5	0.5	1.2	0.5	0.4	0.1	1.2

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Appendix B2.—Page 2 of 2.

Date	2000-2009 Summary													
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Ave.	Min.	Max.
7/15	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.5	0.4	0.4	0.4	0.3	0.2	0.5
7/16	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.4	0.3	0.4	0.4	0.3	0.2	0.4
7/17	0.3	0.3	0.3	0.2		0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.2	0.4
7/18	0.2	0.4	0.3	0.2		0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.4
7/19	0.2	0.3	0.2		0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.3
7/20	0.3	0.3	0.2		0.2	0.2	0.2	0.3	0.3	0.2	0.5	0.2	0.2	0.3
7/21	0.2	0.4	0.3	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.5	0.2	0.2	0.4
7/22	0.2	0.5	0.3	0.1	0.2		0.3	0.5	0.3	0.2	0.3	0.3	0.1	0.5
7/23	0.2	0.4	0.4	0.2	0.2		0.3	0.5	0.3	0.2	0.4	0.3	0.2	0.5
7/24	0.2	0.4	0.3	0.2	0.2		0.3	0.3	0.3	0.2	0.4	0.3	0.2	0.4
7/25	0.2	0.5	0.3	0.1	0.2		0.3	0.5	0.4	0.2	0.3	0.3	0.1	0.5
7/26	0.2	0.5	0.4	0.2	0.2	0.3	0.4	0.6	0.4	0.2	0.2	0.3	0.2	0.6
7/27	0.3	0.3	0.1	0.2	0.2	0.4	0.6	0.4	0.2	0.1	0.3	0.1	0.1	0.6
7/28	0.3	0.4		0.3	0.3		0.6	0.4	0.2	0.2	0.3	0.2	0.2	0.6
7/29	0.3	0.3	0.2	0.3	0.4	0.4	0.6	0.4	0.1	0.2	0.3	0.1	0.1	0.6
7/30	0.2	0.2		0.3	0.3	0.3	0.6	0.4	0.2	0.2	0.3	0.2	0.2	0.6
7/31	0.2	0.3	0.2	0.2	0.3	0.5	0.6	0.6	0.2	0.2	0.3	0.2	0.2	0.6
8/1	0.1	0.2	0.2	0.3	0.3	0.4	0.5	0.6	0.2	0.2	0.3	0.1	0.1	0.6
8/2	0.1	0.3	0.1	0.3	0.2	0.5	0.4	0.6	0.3	0.2	0.3	0.1	0.1	0.6
8/3	0.1	0.3	0.1	0.3	0.3		0.4	0.6	0.3	0.2	0.3	0.1	0.1	0.6
8/4	0.1	0.3	0.1	0.2	0.3	0.4	0.4	0.7	0.3	0.2	0.3	0.1	0.1	0.7
8/5	0.2	0.2	0.2	0.2	0.3	0.5	0.4	0.7	0.3	0.2	0.3	0.2	0.2	0.7
8/6	0.2	0.2	0.1	0.3	0.3	0.3	0.4	0.7	0.3	0.2	0.3	0.1	0.1	0.7
8/7	0.1	0.3		0.3	0.4	0.3	0.4	0.7	0.3	0.2	0.3	0.1	0.1	0.7
8/8	0.2			0.2		0.4	0.4	0.6	0.3	0.3	0.3	0.2	0.2	0.6
8/9		0.3	0.2			0.3	0.5	0.3	0.6	0.3	0.3	0.4	0.2	0.6
8/10		0.3	0.2			0.4	0.4	0.3	0.5	0.2	0.3	0.3	0.2	0.5
8/11		0.3	0.2	0.3	0.3	0.4	0.2			0.2	0.3	0.3	0.2	0.4
8/12		0.2	0.3	0.3	0.4	0.4	0.2	0.3		0.2	0.3	0.3	0.2	0.4
8/13		0.2	0.2	0.3	0.4	0.4	0.2	0.3	0.1	0.2	0.2	0.2	0.1	0.4
8/14		0.2	0.1	0.2	0.5	0.5	0.1	0.4	0.2	0.2	0.3	0.1	0.1	0.5
8/15		0.2	0.3	0.2	0.4	0.6	0.1	0.4	0.2	0.2	0.3	0.1	0.1	0.6
8/16		0.3	0.3	0.2	0.4	0.6	0.1	0.4	0.2	0.2	0.3	0.1	0.1	0.6
8/17		0.2	0.3	0.2	0.4		0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.4
8/18		0.1		0.2	0.3	0.5	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.5
8/19		0.2	0.2	0.2	0.4	0.4	0.2	0.5	0.2	0.2	0.2	0.3	0.2	0.5
8/20		0.2	0.2	0.2	0.3	0.3	0.1	0.7	0.2	0.2	0.2	0.3	0.1	0.7
8/21		0.3		0.2	0.3	0.3	0.2	0.7	0.3	0.2	0.3	0.3	0.2	0.7
8/22		0.2	0.1	0.2	0.2		0.2	0.5	0.2	0.2	0.2	0.2	0.1	0.5
8/23				0.2	0.2	0.3		0.1	0.9	0.3	0.2	0.3	0.1	0.9
8/24				0.1	0.2			0.1	0.9	0.2	0.2	0.3	0.1	0.9

Note: Value entered was lowest value for that day. Blanks indicate missing data.

## **APPENDIX C: CHINOOK SALMON**

Appendix C1.—Historical daily mean tidal CPUE for Chinook salmon catches in the Bethel test fishery, 2000–2010.

Date	2000 <sup>a,b</sup>	2001	2002	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	3.3	9.3	10.1	11.8	19.7	22.0	19.4	13.0	9.7	9.7	5.7	2000-
SUB <sup>d</sup> :	39.3	45.2	37.7	40.6	47.2	42.8	39.1	47.3	60.9	NA	NA	2000-
COM <sup>e</sup> :	0.4	0.1	0.1	0.2	2.3	4.8	2.8	0.2	8.9	6.6	2.7	2009
6/1	0	0	1	3	0	0	0	0	0	0	0	0
6/2	0	1	11	2	0	0	0	3	0	0	3	2
6/3	0	0	17	3	1	0	0	0	1	1	1	2
6/4	0	0	6	6	0	0	1	0	3	3	3	2
6/5	1	4	4	9	6	4	3	1	0	6	0	4
6/6	6	1	7	4	4	1	4	0	1	7	1	4
6/7	3	0	3	11	4	4	0	2	0	7	1	3
6/8	0	0	3	11	13	11	1	3	6	4	0	5
6/9	1	0	18	36	30	7	1	4	10	5	1	11
6/10	4	3	15	25	6	19	0	7	16	7	1	10
6/11	11	3	8	16	43	42	4	4	4	12	4	15
6/12	1	1	23	26	29	27	4	7	6	10	6	13
6/13	0	0	19	27	27	19	15	3	10	8	11	13
6/14	1	0	26	22	43	37	15	10	7	10	8	17
6/15	0	3	38	36	42	12	28	17	33	33	31	24
6/16	1	0	16	28	53	50	19	3	19	57	39	25
6/17	4	11	15	47	36	29	30	19	20	18	18	23
6/18	1	11	21	31	49	35	44	15	7	20	38	23
6/19	3	1	26	28	34	31	37	20	18	24	25	22
6/20	7	6	5	22	53	59	1	22	35 <sup>f</sup>	23	17	23
6/21	4	3	14	27	72	40	44	7	36	30	34	28
6/22	4	11	1	11	44	34	12	10	32	35	23	19
6/23	13	8	10	13	44	24	35	9	36	50 <sup>f</sup>	18	24
6/24	1	3	11	14	48	32 <sup>f</sup>	31	17	25 <sup>f</sup>	56	11	24
6/25	2	5	11	15	47	35	27	24	16	37	5 <sup>f</sup>	22
6/26	0	4	13	14	47	34	31 <sup>f</sup>	15	35	59 <sup>f</sup>	12	25
6/27	1	11	8	7	16	11	29	16	24 <sup>f</sup>	33	13	16
6/28	6	6	10	13	47	11 <sup>f</sup>	27 <sup>f</sup>	22	23	20	8 <sup>f</sup>	18
6/29	3	1	3	10	46	21	25	30	29	31	13	20
6/30	1	0	11	19	35 <sup>f</sup>	21 <sup>f</sup>	25	36	37	8	7	19
7/1	0	1	5	2	24	18 <sup>f</sup>	18	29	17	12 <sup>f</sup>	7	13
7/2	1	3	12	4	16 <sup>f</sup>	13	19	23	10 <sup>f</sup>	8	8	11
7/3	0	2	4	7	12	11	23	29	12	8	11	11
7/4	0	1	8	8	6	19	23	19	12	7	11	10
7/5	0 <sup>f</sup>	3	6	10	8	29	3	8	12	9	12	9
7/6	2	0	5	7	9 <sup>f</sup>	31	19	11	3	3	5 <sup>f</sup>	9
7/7	1	3	3	5	5 <sup>f</sup>	20	7	8	8	6	8	7
7/8	0	1	1	2	7	14	3	6	7	9	5	5
7/9	0	0	1	4	10	12	4	1	5	0	4 <sup>f</sup>	4
7/10	0	2	6	3	3	10	4	17	3	0	5	5
7/11	2	2	3	1	5	8	7	9	1	0 <sup>f</sup>	2	4
7/12	0	0	0	3	3	8	3	0	5 <sup>f</sup>	11	4	3
7/13	0	1	0	4	12	7	9	3	3	3	3	4
7/14	0	0	2	6	7	7	6	3	1	0 <sup>f</sup>	2 <sup>f</sup>	3
7/15	0	0	0	5	3	2	1	4	1	0	2	2
7/16	0	1	2	3	3	0	0	5	3	0	2 <sup>f</sup>	2
7/17	0	2	0	1	3	0	2	2	8	0	4	2
7/18	2	2	0	3	3	1	0	0	6	7 <sup>f</sup>	0	2
7/19	0	0	2	3	3	2	0	0	3 <sup>f</sup>	2	0 <sup>f</sup>	1

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Appendix C1.–Page 2 of 3.

Date	2000 <sup>a,b</sup>	2001	2002	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	3.3	9.3	10.1	11.8	19.7	22.0	19.4	13.0	9.7	9.7	5.7	
SUB <sup>d</sup> :	39.3	45.2	37.7	40.6	47.2	42.8	39.1	47.3	60.9	NA	NA	2000-
COM <sup>e</sup> :	0.4	0.1	0.1	0.2	2.3	4.8	2.8	0.2	8.9	6.6	2.7	2009
7/20	2	0	2	1	17	1	0	2	0	1	0	3
7/21	0	0	0	0	29	0	4	3	0	2	0 <sup>f</sup>	4
7/22	0	0	0	0	2	0	0	3	3 <sup>f</sup>	0	0	1
7/23	0	0	0	0	0	0	0	0	0	0	0 <sup>f</sup>	0
7/24	0	0	2	0	6	0	2	2	2	0	2	1
7/25	0	0	0	2	3	0	0	0	0 <sup>f</sup>	0	2	0
7/26	0	0	0	2	5	0	2	0	0	0	2 <sup>f</sup>	1
7/27	0	0	2	3	0	0	4	0	0	0	0	1
7/28	0	0	0	1	3 <sup>f</sup>	0	2	0	0	0 <sup>f</sup>	0 <sup>f</sup>	1
7/29	0	0	0	0	0	2	0	0	0	0	0	0
7/30	0	0	0	0	0 <sup>f</sup>	1	0	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0
7/31	2	2	0	0 <sup>f</sup>	0	0	0	0	0	3	0	1
8/1	0 <sup>f</sup>	0	0	0 <sup>f</sup>	2	3	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0	1
8/2	0	0	0 <sup>f</sup>	0	0	2 <sup>f</sup>	0	0	0 <sup>f</sup>	0	2	0
8/3	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	1	1 <sup>f</sup>	0 <sup>f</sup>	0	0	2	0
8/4	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0 <sup>f</sup>	2 <sup>f</sup>	0	3 <sup>f</sup>	0 <sup>f</sup>	1 <sup>f</sup>	1
8/5	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	5 <sup>f</sup>	0	0	3	0	0	1
8/6	0	0 <sup>f</sup>	0	2	0 <sup>f</sup>	0	0	2 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0
8/7	0	0	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	2	0	0	0
8/8	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	1 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/9	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	2	0	0	0	0	0
8/10	0	0	0	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0
8/11	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/12	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0	0	0 <sup>f</sup>	0
8/13	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/14	0 <sup>f</sup>	0	4	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0
8/15	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	2 <sup>f</sup>	0	0 <sup>f</sup>	0	0	0
8/16	0	0	0	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0
8/17	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0 <sup>f</sup>	2	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0
8/18	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/19	0	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0	0	0	0
8/20	0	0 <sup>f</sup>	2	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0
8/21	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0	0	0	0
8/22	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/23	0	0	0	0	0 <sup>f</sup>	0	0	0	0	0	0	0
8/24			0		0 <sup>f</sup>		0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0
8/25	f	f		f	0	f	f	f		f		0
8/26				f								
8/27					f							
8/28				f				f				
8/29				f			f					
8/30					f			f				
8/31						f		f				
9/1					f							
9/2					f							
9/3				f								
9/4					f							
9/5						f						
9/6							f					
9/7							f					
9/8								f				

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*Note:* Date with no data indicates day when the project was not operational.

- <sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.
- <sup>b</sup> Year when the 2005 SEG Kogruklu River weir escapement goal range of 5,300 to 14,000 would not have been achieved.
- <sup>c</sup> Escapement at the Kogruklu River weir in thousands (X 1,000) of fish.
- <sup>d</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.
- <sup>e</sup> District 1 commercial harvest in thousands (X 1,000) of fish.
- <sup>f</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix C2.—Historical cumulative mean tidal CPUE for Chinook salmon catches in the Bethel test fishery, 2000–2010.

Date	2000 <sup>a,b</sup>	2001	2002	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	3.3	9.3	10.1	11.8	19.7	22.0	19.4	13.0	9.7	9.7	5.7	2000-
SUB <sup>d</sup> :	39.3	45.2	37.7	40.6	47.2	42.8	39.1	47.3	60.9	NA	NA	2009
COM <sup>e</sup> :	0.4	0.1	0.1	0.2	2.3	4.8	2.8	0.2	8.9	6.6	2.7	2009
6/1	0	0	1	3	0	0	0	0	0	0	0	0
6/2	0	1	13	5	0	0	0	3	0	3	2	
6/3	0	1	29	7	1	0	0	3	1	4	5	
6/4	0	1	35	13	1	0	1	3	4	7	7	
6/5	1	4	6	44	19	6	3	3	10	7	10	
6/6	7	6	13	48	23	7	6	3	17	8	13	
6/7	10	6	15	59	27	11	6	4	24	10	17	
6/8	10	6	18	70	40	23	8	7	10	28	10	22
6/9	11	6	36	106	70	30	9	11	20	33	11	33
6/10	16	8	51	131	75	49	9	19	36	40	13	43
6/11	27	11	59	147	118	91	14	23	40	52	17	58
6/12	28	12	82	172	147	118	18	30	46	62	23	72
6/13	28	12	101	199	174	137	33	33	56	71	34	84
6/14	30	12	127	221	217	173	48	42	63	81	42	102
6/15	30	15	165	258	258	186	77	60	96	114	73	126
6/16	31	15	181	285	311	236	96	62	115	171	112	150
6/17	35	26	196	332	347	265	126	82	135	189	130	173
6/18	37	37	217	362	396	299	170	97	142	209	168	197
6/19	40	38	243	390	430	330	207	117	160	232	193	219
6/20	47	44	248	413	484	389	208	138	195 <sup>f</sup>	255	210	242
6/21	51	47	262	439	556	430	252	146	230	286	244	270
6/22	56	58	263	450	600	464	263	156	262	320	267	289
6/23	68	66	273	463	643	488	298	165	298	371 <sup>f</sup>	285	313
6/24	70	69	284	478	691	520 <sup>f</sup>	329	182	323 <sup>f</sup>	426	297	337
6/25	71	74	295	493	738	555	356	206	339	463	302 <sup>f</sup>	359
6/26	71	78	308	508	785	589	388 <sup>f</sup>	221	374	522 <sup>f</sup>	314	384
6/27	73	89	316	515	801	600	417	237	399 <sup>f</sup>	555	327	400
6/28	78	95	325	527	848	611 <sup>f</sup>	444 <sup>f</sup>	259	422	575	335 <sup>f</sup>	419
6/29	81	96	328	537	893	632	469	289	451	606	349	438
6/30	83	96	339	556	928 <sup>f</sup>	653 <sup>f</sup>	493	325	488	615	355	458
7/1	83	98	344	558	951	672 <sup>f</sup>	511	354	505	626 <sup>f</sup>	362	470
7/2	84	100	356	563	967 <sup>f</sup>	684	530	377	515 <sup>f</sup>	635	370	481
7/3	84	102	359	569	979	696	553	406	527	643	381	492

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Date	2000 <sup>a,b</sup>	2001	2002	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	3.3	9.3	10.1	11.8	19.7	22.0	19.4	13.0	9.7	9.7	5.7	2000-
SUB <sup>d</sup> :	39.3	45.2	37.7	40.6	47.2	42.8	39.1	47.3	60.9	NA	NA	2009
COM <sup>e</sup> :	0.4	0.1	0.1	0.2	2.3	4.8	2.8	0.2	8.9	6.6	2.7	2009
7/4	84	104	368	578	985	715	576	425	539	650	393	502
7/5	84 <sup>f</sup>	106	374	588	993	744	579	433	551	659	404	511
7/6	86	106	378	595	1,002 <sup>f</sup>	775	598	443	554	662	409 <sup>f</sup>	520
7/7	87	109	381	599	1,006 <sup>f</sup>	795	604	451	562	668	417	526
7/8	87	110	383	601	1,013	809	607	457	569	676	422	531
7/9	87	110	384	605	1,023	821	611	459	575	676	426 <sup>f</sup>	535
7/10	87	112	390	607	1,026	831	616	476	578	676	431	540
7/11	89	114	393	609	1,031	840	623	485	579	676 <sup>f</sup>	433	544
7/12	89	114	393	612	1,034	848	626	485	585 <sup>f</sup>	688	438	547
7/13	89	115	393	616	1,045	855	634	487	587	691	440	551
7/14	89	115	395	622	1,052	862	640	490	589	691 <sup>f</sup>	443 <sup>f</sup>	555
7/15	89	115	395	628	1,055	864	641	495	590	691	445	556
7/16	89	116	397	631	1,058	864	641	499	593	691	447 <sup>f</sup>	558
7/17	89	118	397	632	1,061	864	644	501	601	691	451	560
7/18	91	120	397	635	1,064	865	644	501	607	697 <sup>f</sup>	451	562
7/19	91	120	399	638	1,066	867	644	501	609 <sup>f</sup>	700	451 <sup>f</sup>	564
7/20	93	120	401	639	1,084	868	644	504	609	700	451	566
7/21	93	120	401	639	1,113	868	648	506	609	702	451 <sup>f</sup>	570
7/22	93	120	401	639	1,116	868	648	509	613 <sup>f</sup>	702	451	571
7/23	93	120	401	639	1,116	868	648	509	613	702	451 <sup>f</sup>	571
7/24	93	120	403	639	1,122	868	649	511	615	702	453	572
7/25	93	120	403	640	1,124	868	649	511	615 <sup>f</sup>	702	455	573
7/26	93	120	403	642	1,129	868	651	511	615	702	456 <sup>f</sup>	573
7/27	93	120	404	645	1,129	868	655	511	615	702	456	574
7/28	93	120	404	646	1,131 <sup>f</sup>	868	657	511	615	702 <sup>f</sup>	456 <sup>f</sup>	575
7/29	93	120	404	646	1,131	870	657	511	615	702	456	575
7/30	93	120	404	646	1,131 <sup>f</sup>	871	657	511	615 <sup>f</sup>	702	456 <sup>f</sup>	575
7/31	95	122	404	646 <sup>f</sup>	1,131	871	657	511	615	706	456	576
8/1	95 <sup>f</sup>	122	404	646 <sup>f</sup>	1,134	874	657 <sup>f</sup>	511 <sup>f</sup>	615	706 <sup>f</sup>	456	576
8/2	95	122	404 <sup>f</sup>	646	1,134	875 <sup>f</sup>	657	511	615 <sup>f</sup>	706	458	576
8/3		122 <sup>f</sup>	404	646	1,134 <sup>f</sup>	876	658 <sup>f</sup>	511 <sup>f</sup>	615	706	460	577
8/4	95 <sup>f</sup>	122	404	646 <sup>f</sup>	1,134	876 <sup>f</sup>	660 <sup>f</sup>	511	618 <sup>f</sup>	706 <sup>f</sup>	461 <sup>f</sup>	577
8/5	95 <sup>f</sup>	122	404 <sup>f</sup>	646 <sup>f</sup>	1,134 <sup>f</sup>	881 <sup>f</sup>	660	511	621	706	461	578

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Date	2000 <sup>a,b</sup>	2001	2002	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	3.3	9.3	10.1	11.8	19.7	22.0	19.4	13.0	9.7	9.7	5.7	
SUB <sup>d</sup> :	39.3	45.2	37.7	40.6	47.2	42.8	39.1	47.3	60.9	NA	NA	2000-
COM <sup>e</sup> :	0.4	0.1	0.1	0.2	2.3	4.8	2.8	0.2	8.9	6.6	2.7	2009
8/6	95	122 <sup>f</sup>	404	648	1,134 <sup>f</sup>	881	660	513 <sup>f</sup>	621 <sup>f</sup>	706 <sup>f</sup>	461 <sup>f</sup>	578
8/7	95	122	404	648 <sup>f</sup>	1,134	881	660 <sup>f</sup>	513	623	706	461	579
8/8	f	122 <sup>f</sup>	404 <sup>f</sup>	649 <sup>f</sup>	1,134	881 <sup>f</sup>	660 <sup>f</sup>	513 <sup>f</sup>	623 <sup>f</sup>	706 <sup>f</sup>	461	579
8/9	95 <sup>f</sup>	122	404 <sup>f</sup>	649	1,134 <sup>f</sup>	881 <sup>f</sup>	662	513	623	706	461	579
8/10	95	122	404	649	1,134 <sup>f</sup>	881	662 <sup>f</sup>	513 <sup>f</sup>	623	706	461 <sup>f</sup>	579
8/11	95	122 <sup>f</sup>	404	649 <sup>f</sup>	1,134	881 <sup>f</sup>	662 <sup>f</sup>	513	623 <sup>f</sup>	706 <sup>f</sup>	461	579
8/12	f	122	404 <sup>f</sup>	649 <sup>f</sup>	1,134 <sup>f</sup>	881	662	513	623	706	461 <sup>f</sup>	579
8/13	95	122 <sup>f</sup>	404 <sup>f</sup>	649	1,134 <sup>f</sup>	881	662	513 <sup>f</sup>	623 <sup>f</sup>	706 <sup>f</sup>	461	579
8/14	95 <sup>f</sup>	122	408	649 <sup>f</sup>	1,134	881	662 <sup>f</sup>	513 <sup>f</sup>	623	706	461	579
8/15	95	122 <sup>f</sup>	408	649 <sup>f</sup>	1,134	881 <sup>f</sup>	664 <sup>f</sup>	513	623 <sup>f</sup>	706	461	579
8/16	95	122	408	649	1,134 <sup>f</sup>	881	664	513 <sup>f</sup>	623	706 <sup>f</sup>	461	579
8/17	95 <sup>f</sup>	122 <sup>f</sup>	408	649	1,134 <sup>f</sup>	883	664 <sup>f</sup>	513 <sup>f</sup>	623	706	461	580
8/18	f	122	408	649 <sup>f</sup>	1,134	883	664 <sup>f</sup>	513	623 <sup>f</sup>	706 <sup>f</sup>	461	580
8/19	95	122	408	649 <sup>f</sup>	1,134 <sup>f</sup>	883	664	513	623	706	461	580
8/20	95	122 <sup>f</sup>	410	649	1,134 <sup>f</sup>	883	664	513 <sup>f</sup>	623 <sup>f</sup>	706	461	580
8/21	95 <sup>f</sup>	122	410	649 <sup>f</sup>	1,134	883	664 <sup>f</sup>	513	623	706	461	580
8/22	95 <sup>f</sup>	122 <sup>f</sup>	410	649 <sup>f</sup>	1,134	883 <sup>f</sup>	664 <sup>f</sup>	513 <sup>f</sup>	623 <sup>f</sup>	706 <sup>f</sup>	461	580
8/23	95	122	410	649	1,134 <sup>f</sup>	883	664	513	623	706	461	580
8/24			410		1,134 <sup>f</sup>				513 <sup>f</sup>	623	706	461
8/25	f	f		f	1,134		f	f		f		677
												1,134
8/26												
8/27						f						
8/28				f				f				
8/29				f			f					
8/30					f			f				
8/31												
9/1				f			f					
9/2				f		f						
9/3				f								
9/4					f							
9/5						f						
9/6							f					
9/7							f					
9/8								f				
Totals	95	122	410	649	1,134	883	664	513	623	706	461	580

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*Note:* Date with no data indicates day when the project was not operational.

<sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.

<sup>b</sup> Year when the 2005 SEG Kogruklu River weir escapement goal range of 5,300 to 14,000 would not have been achieved.

<sup>c</sup> Escapement at the Kogruklu River weir in thousands (X 1,000) of fish.

<sup>d</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.

<sup>e</sup> District 1 commercial harvest in thousands (X 1,000) of fish.

<sup>f</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix C3.—Historical percent passage (2000–2010) of Chinook salmon at the Bethel test fish site, Bethel test fishery, 2010.

Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 2000- 2009
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	0	0	0	2	1	0	0	0	0	0	1	0
6/3	0	0	0	5	1	0	0	0	0	0	1	1
6/4	0	0	0	5	2	0	0	0	0	1	2	1
6/5	2	3	1	7	2	1	0	1	0	1	2	2
6/6	8	5	3	7	2	1	1	1	1	2	2	3
6/7	11	5	4	9	4	1	1	1	1	3	2	4
6/8	11	5	4	11	6	3	1	1	2	4	2	5
6/9	12	5	9	16	7	3	1	2	3	5	2	6
6/10	17	7	13	20	10	6	1	4	6	6	3	9
6/11	29	9	14	23	13	10	2	4	6	7	4	12
6/12	30	10	20	27	15	13	3	6	7	9	5	14
6/13	30	10	25	31	19	15	5	6	9	10	7	16
6/14	32	10	31	34	23	20	7	8	10	12	9	19
6/15	32	12	40	40	27	21	12	12	15	16	16	23
6/16	33	12	44	44	31	27	14	12	18	24	24	26
6/17	38	22	48	51	35	30	19	16	22	27	28	31
6/18	39	30	53	56	38	34	26	19	23	30	36	35
6/19	42	31	59	60	43	37	31	23	26	33	42	39
6/20	50	36	61	64	49	44	31	27	31	36	46	43
6/21	54	38	64	68	53	49	38	28	37	40	53	47
6/22	59	47	64	69	57	53	40	30	42	45	58	51
6/23	72	54	67	71	61	55	45	32	48	53	62	56
6/24	74	56	69	74	65	59	50	36	52	60	64	59
6/25	75	61	72	76	69	63	54	40	54	66	65	63
6/26	75	64	75	78	71	67	58	43	60	74	68	67
6/27	77	73	77	79	75	68	63	46	64	79	71	70
6/28	83	78	79	81	79	69	67	51	68	82	73	74
6/29	86	79	80	83	82	72	71	56	72	86	76	77
6/30	87	79	83	86	84	74	74	63	78	87	77	80
7/1	87	80	84	86	85	76	77	69	81	89	79	81
7/2	89	82	87	87	86	78	80	73	83	90	80	83
7/3	89	84	88	88	87	79	83	79	85	91	83	85
7/4	89	85	90	89	88	81	87	83	87	92	85	87
7/5	89	87	91	91	88	84	87	84	88	93	88	88
7/6	91	87	92	92	89	88	90	91	86	89	94	90
7/7	92	89	93	92	89	90	91	88	90	95	90	91
7/8	92	91	93	93	90	92	91	89	91	96	92	92
7/9	92	91	94	93	90	93	92	89	92	96	92	92
7/10	92	92	95	94	91	94	93	93	93	96	94	93
7/11	94	94	96	94	91	95	94	94	93	96	94	94
7/12	94	94	96	94	92	96	94	94	94	97	95	95
7/13	94	95	96	95	93	97	96	95	94	98	95	95
7/14	94	95	96	96	93	98	96	96	94	98	96	96
7/15	94	95	96	97	93	98	97	96	95	98	96	96
7/16	94	95	97	97	94	98	97	97	95	98	97	96
7/17	94	97	97	97	94	98	97	98	96	98	98	97
7/18	96	98	97	98	94	98	97	98	97	99	98	97
7/19	96	98	97	98	96	98	97	98	98	99	98	98
7/20	98	98	98	98	98	98	97	98	98	99	98	98
7/21	98	98	98	98	98	98	98	99	98	100	98	98
7/22	98	98	98	98	98	98	98	99	98	100	98	98
7/23	98	98	98	98	99	98	98	99	98	100	98	98
7/24	98	98	98	98	99	98	98	100	99	100	98	99
7/25	98	98	98	99	100	98	98	100	99	100	99	99
7/26	98	98	98	99	100	98	98	100	99	100	99	99
7/27	98	98	99	99	100	98	99	100	99	100	99	99
7/28	98	98	99	100	100	98	99	100	99	100	99	99
7/29	98	98	99	100	100	99	99	100	99	100	99	99
7/30	98	98	99	100	100	99	99	100	99	100	99	99
7/31	100	100	99	100	100	99	99	100	99	100	99	99

Note: The boxes represent the central 50% of the run and the shaded cells represent the median passage date of the run.

## **APPENDIX D: SOCKEYE SALMON**

Appendix D1.—Historical daily mean tidal CPUE for sockeye salmon catches in the Bethel test fishery, 2000–2010.

Date	2000 <sup>ab</sup>	2001	2002 <sup>ab</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	2.9	8.8	4.1	9.2	6.8	37.9	60.8	16.5	19.7	23.8	14.0	2000-
SUB <sup>d</sup> :	23.6	29.1	14.4	20.8	17.4	22.0	17.9	20.9	31.4	NA	NA	2009
COM <sup>e</sup> :	4.1	0.1	0.1	0.3	8.5	27.6	12.6	0.7	15.6	25.7	22.4	2009
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	0	0	0	0	0	0	0	0	0	0	0	0
6/3	0	0	0	0	0	3	0	0	0	0	0	0
6/4	0	0	0	0	0	0	0	0	0	0	0	0
6/5	0	0	0	0	0	3	0	0	0	0	0	0
6/6	0	9	0	0	0	0	0	0	0	0	0	1
6/7	0	0	0	0	0	0	0	0	0	0	0	0
6/8	0	0	0	0	0	0	0	0	0	1	0	0
6/9	3	0	3	5	8	5	0	0	0	3	0	3
6/10	3	2	5	18	3	11	0	0	0	0	0	4
6/11	14	0	10	14	11	24	0	0	0	3	0	8
6/12	11	6	17	9	5	17	3	3	0	3	3	7
6/13	6	7	26	8	11	33	0	14	3	3	3	11
6/14	9	0	6	14	11	53	0	5	3	0	0	10
6/15	3	3	25	29	28	5	8	8	29	2	15	14
6/16	3	12	46	79	53	27	13	6	11	15	26	26
6/17	6	62	21	103	15	55	19	14	3	3	19	30
6/18	14	23	16	56	44	100	38	10	14	28	19	34
6/19	20	29	22	111	23	108	56	14	25	24	58	43
6/20	17	14	44	72	58	190	24	24	15 <sup>f</sup>	27	7	49
6/21	38	53	32	67	94	232	58	49	26	33	102	68
6/22	26	30	18	61	145	190	20	39	109	25	72	66
6/23	224	216	35	24	119	183	111	11	84	80 <sup>f</sup>	24	109
6/24	66	241	21	48	205	131 <sup>f</sup>	72	93	60 <sup>f</sup>	89	19	102
6/25	38	48	7	53	133	119	32	48	74	89	8 <sup>f</sup>	64
6/26	6	82	15	22	61	151	102 <sup>f</sup>	55	63	99 <sup>f</sup>	19	66
6/27	31	82	18	43	27	145	192	43	54 <sup>f</sup>	60	17	69
6/28	69	45	22	158	79	116 <sup>f</sup>	121 <sup>f</sup>	123	46	42	17 <sup>f</sup>	82
6/29	17	23	16	214	89	151	51	150	42	100	18	85
6/30	38	12	22	89	60 <sup>f</sup>	151 <sup>f</sup>	51	123	153	37	45	74
7/1	64	22	18	100	32	94 <sup>f</sup>	194	101	120	52 <sup>f</sup>	24	80
7/2	58	29	18	66	38 <sup>f</sup>	66	83	79	159 <sup>f</sup>	73	30	67
7/3	35	47	5	33	66	75	132	32	86	87	16	60
7/4	28	19	10	33	89	72	142	31	74	70	33	57
7/5	5 <sup>f</sup>	8	12	32	140	70	8	30	61	88	51	45
7/6	14	9	11	26	106 <sup>f</sup>	72	122	58	138	33	9 <sup>f</sup>	59
7/7	23	5	10	14	72 <sup>f</sup>	60	54	79	37	39	53	39

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Appendix D1.–Page 2 of 3.

Date	2000 <sup>ab</sup>	2001	2002 <sup>ab</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	2.9	8.8	4.1	9.2	6.8	37.9	60.8	16.5	19.7	23.8	14.0	2000-
SUB <sup>d</sup> :	23.6	29.1	14.4	20.8	17.4	22.0	17.9	20.9	31.4	NA	NA	2009
COM <sup>e</sup> :	4.1	0.1	0.1	0.3	8.5	27.6	12.6	0.7	15.6	25.7	22.4	2009
7/8	75	26	13	8	87	58	58	99	22	0	58	45
7/9	36	8	5	13	53	43	21	29	49	69	29 <sup>f</sup>	33
7/10	14	8	0	12	15	29	23	10	76	24	63	21
7/11	13	5	2	13	31	15	47	8	3	98 <sup>f</sup>	20	23
7/12	8	8	2	7	3	10	87	5	10 <sup>f</sup>	14	36	15
7/13	0	4	0	16	12	10	27	11	4	14	28	10
7/14	2	4	0	20	7	10	8	29	2	13 <sup>f</sup>	53 <sup>f</sup>	10
7/15	0	2	0	10	3	6	8	13	5	11	191	6
7/16	0	3	0	2	0	0	10	0	3	9	24 <sup>f</sup>	3
7/17	4	2	0	0	4	8	23	11	8	0	66	6
7/18	0	0	0	0	4	8	8	15	3	16 <sup>f</sup>	34	5
7/19	0	0	0	0	8	11	6	3	3 <sup>f</sup>	9	19 <sup>f</sup>	4
7/20	0	0	4	4	7	11	41	11	3	4	6	9
7/21	0	0	0	4	12	3	5	0	0	3	13 <sup>f</sup>	3
7/22	0	0	2	0	3	2	12	3	5 <sup>f</sup>	0	2	3
7/23	0	0	0	1	5	4	16	0	2	2	2 <sup>f</sup>	3
7/24	0	0	0	5	5	0	2	1	0	2	5	2
7/25	2	0	0	2	0	0	2	5	2 <sup>f</sup>	6	2	2
7/26	2	0	2	0	7	4	2	0	2	5	5 <sup>f</sup>	2
7/27	2	0	0	0	0	9	4	0	0	3	4	2
7/28	0	0	1	0	0 <sup>f</sup>	2	4	0	3	2 <sup>f</sup>	2 <sup>f</sup>	1
7/29	0	0	3	0	0	9	4	3	2	1	2	2
7/30	0	0	2	2	0 <sup>f</sup>	8	2	0	0 <sup>f</sup>	0	2 <sup>f</sup>	1
7/31	2	0	0	2 <sup>f</sup>	0	4	2	3	0	0	0	1
8/1	0 <sup>f</sup>	0	2	0 <sup>f</sup>	0	2	2 <sup>f</sup>	5 <sup>f</sup>	0	0 <sup>f</sup>	0	1
8/2	0	0	0 <sup>f</sup>	0	0	5 <sup>f</sup>	6	2	0 <sup>f</sup>	0	0	1
8/3	1	0 <sup>f</sup>	0	0	5 <sup>f</sup>	4	0 <sup>f</sup>	2 <sup>f</sup>	2	2	0	2
8/4	2 <sup>f</sup>	0	0	0 <sup>f</sup>	3	3 <sup>f</sup>	0 <sup>f</sup>	2	2 <sup>f</sup>	5 <sup>f</sup>	0 <sup>f</sup>	2
8/5	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	4 <sup>f</sup>	7 <sup>f</sup>	2	2	2	0	0	2
8/6	0	2 <sup>f</sup>	0	0	0 <sup>f</sup>	2	1	2 <sup>f</sup>	7 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	1
8/7	0	0	0	0 <sup>f</sup>	0	5	0 <sup>f</sup>	0	0	0	0	0
8/8	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	4 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/9	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0	2	0
8/10	0	0	0	0	0 <sup>f</sup>	2	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0

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Appendix D1.–Page 3 of 3.

Date	2000 <sup>ab</sup>	2001	2002 <sup>ab</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	2.9	8.8	4.1	9.2	6.8	37.9	60.8	16.5	19.7	23.8	14.0	2000-
SUB <sup>d</sup> :	23.6	29.1	14.4	20.8	17.4	22.0	17.9	20.9	31.4	NA	NA	2000-
COM <sup>e</sup> :	4.1	0.1	0.1	0.3	8.5	27.6	12.6	0.7	15.6	25.7	22.4	2009
8/11	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	1	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/12	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0	2	0	0	0 <sup>f</sup>	0
8/13	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/14	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	2	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0
8/15	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0	0
8/16	0	0	0	0	0 <sup>f</sup>	0	0	2 <sup>f</sup>	0	0 <sup>f</sup>	0	0
8/17	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0
8/18	0 <sup>f</sup>	0	0	0 <sup>f</sup>	0	4	0 <sup>f</sup>	0	2 <sup>f</sup>	0 <sup>f</sup>	0	1
8/19	0	0	0	0 <sup>f</sup>	1 <sup>f</sup>	0	0	0	0	0	0	0
8/20	0	0 <sup>f</sup>	0	0	3 <sup>f</sup>	0	0	0 <sup>f</sup>	2 <sup>f</sup>	0	0	0
8/21	0 <sup>f</sup>	2	0	0 <sup>f</sup>	0	3	0 <sup>f</sup>	0	0	0	0	0
8/22	0 <sup>f</sup>	0 <sup>f</sup>	0	0 <sup>f</sup>	0	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0 <sup>f</sup>	0	0
8/23	0		0	0	0 <sup>f</sup>	0	0	0	0	0	0	0
8/24			0	0	0 <sup>f</sup>		0 <sup>f</sup>	0 <sup>f</sup>	0	0	0	0
8/25	f	f		f		f	f			f		0
8/26				f								0
8/27				0 <sup>f</sup>								0
8/28				f	0		f					0
8/29				f	0	f						0
8/30					f		f					
8/31							f					
9/1				f								
9/2				f								
9/3				f								
9/4					f							
9/5						f						
9/6							f					
9/7								f				
9/8									f			

Note: Date with no data indicates day when the project was not operational.

<sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.

<sup>b</sup> Year when the 2010 SEG Kogrukuk River weir escapement goal range of 4,400 to 17,000 would not have been achieved.

<sup>c</sup> Escapement at the Kogrukuk River weir in thousands (X 1,000) of fish.

<sup>d</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.

<sup>e</sup> District 1 commercial harvest in thousands (X 1,000) of fish.

<sup>f</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix D2.—Historical cumulative mean tidal CPUE for sockeye salmon catches in the Bethel test fishery, 2000–2010.

Date	2000 <sup>ab</sup>	2001	2002 <sup>ab</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	2.9	8.8	4.1	9.2	6.8	37.9	60.8	16.5	19.7	23.8	14.0	2000-
SUB <sup>d</sup> :	23.6	29.1	14.4	20.8	17.4	22.0	17.9	20.9	31.4	NA	NA	2009
COM <sup>e</sup> :	4.1	0.1	0.1	0.3	8.5	27.6	12.6	0.7	15.6	25.7	22.4	
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	0	0	0	0	0	0	0	0	0	0	0	0
6/3	0	0	0	0	0	3	0	0	0	0	0	0
6/4	0	0	0	0	0	3	0	0	0	0	0	0
6/5	0	0	0	0	0	6	0	0	0	0	0	1
6/6	0	9	0	0	0	6	0	0	0	0	0	1
6/7	0	9	0	0	0	6	0	0	0	0	0	1
6/8	0	9	0	0	0	6	0	0	0	1	0	2
6/9	3	9	3	5	8	11	0	0	0	4	0	4
6/10	6	11	8	24	11	22	0	0	0	4	0	9
6/11	20	11	18	38	22	46	0	0	0	7	0	16
6/12	31	17	35	46	27	63	3	3	0	10	3	24
6/13	37	23	61	54	38	96	3	17	3	13	6	35
6/14	45	23	67	67	49	149	3	23	6	13	6	45
6/15	48	26	92	97	77	154	11	31	34	16	21	59
6/16	51	38	138	176	130	181	24	36	45	31	46	85
6/17	57	100	158	279	145	236	42	50	48	34	65	115
6/18	71	123	174	335	189	336	81	60	62	61	84	149
6/19	91	152	196	446	212	444	136	74	87	86	142	192
6/20	108	166	240	518	270	634	160	98	102 <sup>f</sup>	113	149	241
6/21	146	219	272	585	364	866	219	147	128	146	251	309
6/22	172	249	290	646	509	1,056	239	186	237	171	323	375
6/23	395	465	325	670	628	1,239	350	197	320	251 <sup>f</sup>	347	484
6/24	461	706	346	718	833	1,370 <sup>f</sup>	422	290	381 <sup>f</sup>	340	366	587
6/25	499	754	353	771	966	1,489	454	338	455	429	375 <sup>f</sup>	651
6/26	505	836	368	793	1,027	1,640	556 <sup>f</sup>	393	518	528 <sup>f</sup>	394	716
6/27	536	918	385	836	1,055	1,785	748	436	572 <sup>f</sup>	588	411	786
6/28	605	963	407	994	1,133	1,901 <sup>f</sup>	869 <sup>f</sup>	560	619	629	428 <sup>f</sup>	868
6/29	622	986	424	1,207	1,222	2,052	920	710	660	729	446	953
6/30	660	998	446	1,296	1,283 <sup>f</sup>	2,204 <sup>f</sup>	971	833	813	766	491	1,027
7/1	724	1,020	464	1,395	1,315	2,298 <sup>f</sup>	1,164	934	933	818 <sup>f</sup>	515	1,107
7/2	782	1,048	482	1,462	1,352 <sup>f</sup>	2,365	1,247	1,014	1,092 <sup>f</sup>	892	545	1,173
7/3	817	1,096	486	1,495	1,418	2,440	1,379	1,046	1,178	979	561	1,233
7/4	845	1,115	496	1,528	1,507	2,512	1,520	1,077	1,251	1,048	594	1,290
7/5	850 <sup>f</sup>	1,123	508	1,560	1,647	2,583	1,528	1,107	1,312	1,136	645	1,335
7/6	865	1,132	518	1,586	1,753 <sup>f</sup>	2,655	1,650	1,165	1,450	1,169	655 <sup>f</sup>	1,394

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Appendix D1.–Page 2 of 3.

Date	2000 <sup>ab</sup>	2001	2002 <sup>ab</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	2.9	8.8	4.1	9.2	6.8	37.9	60.8	16.5	19.7	23.8	14.0	2000-
SUB <sup>d</sup> :	23.6	29.1	14.4	20.8	17.4	22.0	17.9	20.9	31.4	NA	NA	2009
COM <sup>e</sup> :	4.1	0.1	0.1	0.3	8.5	27.6	12.6	0.7	15.6	25.7	22.4	
7/7	887	1,137	528	1,600	1,825 <sup>f</sup>	2,715	1,704	1,243	1,487	1,209	708	1,434
7/8	962	1,163	542	1,608	1,912	2,773	1,763	1,343	1,509	1,209	766	1,478
7/9	998	1,171	546	1,621	1,965	2,816	1,784	1,371	1,557	1,277	795 <sup>f</sup>	1,511
7/10	1,012	1,179	546	1,633	1,980	2,845	1,807	1,381	1,634	1,302	858	1,532
7/11	1,025	1,184	548	1,646	2,010	2,860	1,854	1,389	1,636	1,400 <sup>f</sup>	879	1,555
7/12	1,033	1,192	550	1,652	2,013	2,870	1,941	1,394	1,647 <sup>f</sup>	1,414	914	1,571
7/13	1,033	1,197	550	1,668	2,025	2,880	1,968	1,405	1,650	1,428	942	1,580
7/14	1,035	1,201	550	1,688	2,032	2,890	1,976	1,434	1,653	1,441 <sup>f</sup>	995 <sup>f</sup>	1,590
7/15	1,035	1,203	550	1,699	2,035	2,896	1,985	1,447	1,658	1,452	1,186	1,596
7/16	1,035	1,206	550	1,700	2,035	2,896	1,995	1,447	1,661	1,461	1,209 <sup>f</sup>	1,599
7/17	1,039	1,208	550	1,700	2,039	2,904	2,018	1,459	1,669	1,461	1,275	1,605
7/18	1,039	1,208	550	1,700	2,043	2,912	2,026	1,473	1,672	1,476 <sup>f</sup>	1,309	1,610
7/19	1,039	1,208	550	1,700	2,052	2,923	2,031	1,477	1,674 <sup>f</sup>	1,485	1,328 <sup>f</sup>	1,613.90
7/20	1,039	1,208	554	1,704	2,059	2,934	2,073	1,488	1,677	1,489	1,333	1,622.44
7/21	1,039	1,208	554	1,708	2,071	2,937	2,077	1,488	1,677	1,493	1,346 <sup>f</sup>	1,625.13
7/22	1,039	1,208	556	1,708	2,074	2,939	2,089	1,490	1,682 <sup>f</sup>	1,493	1,348	1,627.68
7/23	1,039	1,208	556	1,709	2,079	2,943	2,105	1,490	1,684	1,495	1,350 <sup>f</sup>	1,630.64
7/24	1,039	1,208	556	1,713	2,084	2,943	2,107	1,492	1,684	1,497	1,355	1,632.15
7/25	1,041	1,208	556	1,715	2,084	2,943	2,109	1,497	1,685 <sup>f</sup>	1,502	1,357	1,633.97
7/26	1,042	1,208	558	1,715	2,092	2,948	2,111	1,497	1,687	1,507	1,362 <sup>f</sup>	1,636.37
7/27	1,044	1,208	558	1,715	2,092	2,956	2,115	1,497	1,687	1,511	1,366	1,638.14
7/28	1,044	1,208	559	1,715	2,092 <sup>f</sup>	2,958	2,118	1,497	1,691	1,513 <sup>f</sup>	1,368 <sup>f</sup>	1,639.38
7/29	1,044	1,208	562	1,715	2,092	2,967	2,122	1,499	1,692	1,514	1,370	1,641.48
7/30	1,044	1,208	564	1,716	2,092 <sup>f</sup>	2,974	2,124	1,499	1,692 <sup>f</sup>	1,514	1,371 <sup>f</sup>	1,642.80
7/31	1,046	1,208	564	1,718 <sup>f</sup>	2,092	2,979	2,125	1,502	1,692	1,514	1,371	1,643.99
8/1	1,046 <sup>f</sup>	1,208	566	1,718 <sup>f</sup>	2,092	2,980	2,127 <sup>f</sup>	1,507 <sup>f</sup>	1,692	1,514 <sup>f</sup>	1,371	1,644.93
8/2	1,046	1,208	566 <sup>f</sup>	1,718	2,092	2,986 <sup>f</sup>	2,133	1,508	1,692 <sup>f</sup>	1,514	1,371	1,646.19
8/3	1,047	1,208 <sup>f</sup>	566	1,718	2,097 <sup>f</sup>	2,990	2,133 <sup>f</sup>	1,510 <sup>f</sup>	1,694	1,516	1,371	1,647.72
8/4	1,048 <sup>f</sup>	1,208	566	1,718 <sup>f</sup>	2,100	2,992 <sup>f</sup>	2,133 <sup>f</sup>	1,512	1,696 <sup>f</sup>	1,521 <sup>f</sup>	1,371 <sup>f</sup>	1,649.30
8/5	1,048 <sup>f</sup>	1,208	566 <sup>f</sup>	1,718 <sup>f</sup>	2,104 <sup>f</sup>	2,999 <sup>f</sup>	2,135	1,514	1,697	1,521	1,371	1,650.94
8/6	1,048	1,209 <sup>f</sup>	566	1,718	2,104 <sup>f</sup>	3,001	2,136	1,515 <sup>f</sup>	1,704 <sup>f</sup>	1,521 <sup>f</sup>	1,371 <sup>f</sup>	1,652.18
8/7	1,048	1,209	566	1,718 <sup>f</sup>	2,104	3,006	2,136 <sup>f</sup>	1,515	1,704	1,521	1,371	1,652.64
8/8	1,048 <sup>f</sup>	1,209 <sup>f</sup>	566 <sup>f</sup>	1,718 <sup>f</sup>	2,104	3,009 <sup>f</sup>	2,136 <sup>f</sup>	1,515 <sup>f</sup>	1,704 <sup>f</sup>	1,521 <sup>f</sup>	1,371	1,653.02
8/9	1,048 <sup>f</sup>	1,209	566 <sup>f</sup>	1,718	2,104 <sup>f</sup>	3,009 <sup>f</sup>	2,136	1,515	1,704	1,521	1,374	1,653.02
8/10	1,048	1,209	566	1,718	2,104 <sup>f</sup>	3,011	2,136 <sup>f</sup>	1,515 <sup>f</sup>	1,704	1,521	1,374 <sup>f</sup>	1,653.21
8/11	1,048	1,209 <sup>f</sup>	566	1,718 <sup>f</sup>	2,104	3,011 <sup>f</sup>	2,136 <sup>f</sup>	1,516	1,704 <sup>f</sup>	1,521 <sup>f</sup>	1,374	1,653.30

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Date	2000 <sup>ab</sup>	2001	2002 <sup>ab</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>c</sup> :	2.9	8.8	4.1	9.2	6.8	37.9	60.8	16.5	19.7	23.8	14.0	2000-
SUB <sup>d</sup> :	23.6	29.1	14.4	20.8	17.4	22.0	17.9	20.9	31.4	NA	NA	2009
COM <sup>e</sup> :	4.1	0.1	0.1	0.3	8.5	27.6	12.6	0.7	15.6	25.7	22.4	2009
8/12	1,048 <sup>f</sup>	1,209	566 <sup>f</sup>	1,718 <sup>f</sup>	2,104 <sup>f</sup>	3,011	2,136	1,518	1,704	1,521	1,374 <sup>f</sup>	1,653
8/13	1,048	1,209 <sup>f</sup>	566 <sup>f</sup>	1,718	2,104 <sup>f</sup>	3,011	2,136	1,518 <sup>f</sup>	1,704 <sup>f</sup>	1,521 <sup>f</sup>	1,374	1,653
8/14	1,048 <sup>f</sup>	1,209	566	1,718 <sup>f</sup>	2,104	3,013	2,136 <sup>f</sup>	1,518 <sup>f</sup>	1,704	1,521	1,374	1,654
8/15	1,048	1,209 <sup>f</sup>	566	1,718 <sup>f</sup>	2,104	3,013 <sup>f</sup>	2,136 <sup>f</sup>	1,518	1,704 <sup>f</sup>	1,521	1,374	1,654
8/16	1,048	1,209	566	1,718	2,104 <sup>f</sup>	3,013	2,136	1,520 <sup>f</sup>	1,704	1,521 <sup>f</sup>	1,374	1,654
8/17	1,048 <sup>f</sup>	1,209 <sup>f</sup>	566	1,718	2,104 <sup>f</sup>	3,013	2,136 <sup>f</sup>	1,520 <sup>f</sup>	1,704	1,521	1,374	1,654
8/18	1,048 <sup>f</sup>	1,209	566	1,718 <sup>f</sup>	2,104	3,017	2,136 <sup>f</sup>	1,520	1,706 <sup>f</sup>	1,521 <sup>f</sup>	1,374	1,654
8/19	1,048	1,209	566	1,718 <sup>f</sup>	2,105 <sup>f</sup>	3,017	2,136	1,520	1,706	1,521	1,374	1,655
8/20	1,048	1,209 <sup>f</sup>	566	1,718	2,108 <sup>f</sup>	3,017	2,136	1,520 <sup>f</sup>	1,708 <sup>f</sup>	1,521	1,374	1,655
8/21	1,048 <sup>f</sup>	1,211	566	1,718 <sup>f</sup>	2,108	3,019	2,136 <sup>f</sup>	1,520	1,708	1,521	1,374	1,655
8/22	1,048 <sup>f</sup>	1,211 <sup>f</sup>	566	1,718 <sup>f</sup>	2,108	3,019 <sup>f</sup>	2,136 <sup>f</sup>	1,520 <sup>f</sup>	1,708 <sup>f</sup>	1,521 <sup>f</sup>	1,374	1,655
8/23	1,048	1,211	566	1,718	2,108 <sup>f</sup>	3,019	2,136	1,520	1,708	1,521	1,374	1,655
8/24			566	1,718	2,108 <sup>f</sup>			1,520 <sup>f</sup>	1,708	1,521	1,374	1,523
8/25	f	f		f	2,108	f	f	f	f	f		2,108
8/26				f	2,108							2,108
8/27					2,108 <sup>f</sup>							2,108
8/28				f	2,108		f					2,108
8/29				f	2,108	f						2,108
8/30					f		f					
8/31						f		f				
9/1						f						
9/2						f						
9/3						f						
9/4						f						
9/5						f						
9/6												
9/7						f						
9/8												
Totals	1,048	1,211	566	1,715	2,108	3,019	2,136	1,520	1,708	1,521	1,374	1,655

Note: Date with no data indicates day when the project was not operational.

<sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.

<sup>b</sup> Year when the 2010 SEG Kogrukluuk River weir escapement goal range of 4,400 to 17,000 would not have been achieved.

<sup>c</sup> Escapement at the Kogrukluuk River weir in thousands (X 1,000) of fish.

<sup>d</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.

<sup>e</sup> District 1 commercial harvest in thousands (X 1,000) of fish.

<sup>f</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix D3.—Historical percent passage (2000–2010) of sockeye salmon at the Bethel test fish site, Bethel test fishery, 2010.

Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 2000- 2009
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	0	0	0	0	0	0	0	0	0	0	0	0
6/3	0	0	0	0	0	0	0	0	0	0	0	0
6/4	0	0	0	0	0	0	0	0	0	0	0	0
6/5	0	0	0	0	0	0	0	0	0	0	0	0
6/6	0	1	0	0	0	0	0	0	0	0	0	0
6/7	0	1	0	0	0	0	0	0	0	0	0	0
6/8	0	1	0	0	0	0	0	0	0	0	0	0
6/9	0	1	1	0	0	0	0	0	0	0	0	0
6/10	1	1	1	1	1	1	0	0	0	0	0	1
6/11	2	1	3	2	1	2	0	0	0	0	0	1
6/12	3	1	6	3	1	2	0	0	0	1	0	2
6/13	4	2	11	3	2	3	0	1	0	1	0	3
6/14	4	2	12	4	2	5	0	1	0	1	0	3
6/15	5	2	16	6	4	5	1	2	2	1	2	4
6/16	5	3	24	10	6	6	1	2	3	2	3	6
6/17	5	8	28	16	7	8	2	3	3	2	5	8
6/18	7	10	31	20	9	11	4	4	4	4	6	10
6/19	9	13	35	26	10	15	6	5	5	6	10	13
6/20	10	14	42	30	13	21	8	6	6	7	11	16
6/21	14	18	48	34	17	29	10	10	7	10	18	20
6/22	16	21	51	38	24	35	11	12	14	11	23	23
6/23	38	38	57	39	30	41	16	13	19	16	25	31
6/24	44	58	61	42	40	45	20	19	22	22	27	37
6/25	48	62	62	45	46	49	21	22	27	28	27	41
6/26	48	69	65	46	49	54	26	26	30	35	29	45
6/27	51	76	68	49	50	59	35	29	34	39	30	49
6/28	58	80	72	58	54	63	41	37	36	41	31	54
6/29	59	81	75	70	58	68	43	47	39	48	32	59
6/30	63	82	79	75	61	73	45	55	48	50	36	63
7/1	69	84	82	81	62	76	55	61	55	54	38	68
7/2	75	87	85	85	64	78	58	67	64	59	40	72
7/3	78	90	86	87	67	81	65	69	69	64	41	76
7/4	81	92	88	89	72	83	71	71	73	69	43	79
7/5	81	93	90	91	78	86	72	73	77	75	47	81

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Date	2000	2001	2002	2003	2004	2005			2008	2009	2010	Average 2000- 2009
							2006	2007				
7/6	82	93	92	92	83	88	77	77	85	77	48	85
7/7	85	94	93	93	87	90	80	82	87	79	52	87
7/8	92	96	96	94	91	92	83	88	88	79	56	90
7/9	95	97	97	94	93	93	84	90	91	84	58	92
7/10	97	97	97	95	94	94	85	91	96	86	62	93
7/11	98	98	97	96	96	95	87	91	96	92	64	94
7/12	99	98	97	96	96	95	91	92	96	93	67	95
7/13	99	99	97	97	96	95	92	92	97	94	69	96
7/14	99	99	97	98	97	96	93	94	97	95	72	96
7/15	99	99	97	99	97	96	93	95	97	95	86	97
7/16	99	100	97	99	97	96	93	95	97	96	88	97
7/17	99	100	97	99	97	96	94	96	98	96	93	97
7/18	99	100	97	99	97	96	95	97	98	97	95	98
7/19	99	100	97	99	98	97	95	97	98	98	97	98
7/20	99	100	98	99	98	97	97	98	98	98	97	98
7/21	99	100	98	99	98	97	97	98	98	98	98	98
7/22	99	100	98	99	99	97	98	98	99	98	98	98
7/23	99	100	98	99	99	97	99	98	99	98	98	99
7/24	99	100	98	100	99	97	99	98	99	98	99	99
7/25	99	100	98	100	99	97	99	98	99	99	99	99
7/26	99	100	99	100	99	98	99	98	99	99	99	99
7/27	100	100	99	100	99	98	99	98	99	99	99	99
7/28	100	100	99	100	99	98	99	98	99	99	100	99
7/29	100	100	99	100	99	98	99	99	99	100	100	99
7/30	100	100	100	100	99	99	99	99	99	100	100	99
7/31	100	100	100	100	99	99	100	99	99	100	100	99

Note: The boxes represent the central 50% of the run and the shaded cells represent the median passage date of the run.

**APPENDIX E**  
**CHUM SALMON**

Appendix E1.—Historical daily mean tidal CPUE for chum salmon catches in the Bethel test fishery, 2000–2010.

Date	2000 <sup>a,b,c</sup>	2001	2002 <sup>a</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>d</sup> :	11.5	30.6	51.6	23.4	24.2	197.7	180.6	49.5	45.0	84.9	63.6	
ANI <sup>e</sup> :	177.4	408.8	472.3	477.5	672.9	1151.5	1108.6	696.8	427.9	479.5	429.6	2000-
SUB <sup>f</sup> :	27.3	27.2	36.8	23.9	27.1	26.6	37.4	32.5	39.2	NA	NA	2009
COM <sup>g</sup> :	11.6	1.3	1.9	2.8	20.2	69.1	44.1	10.8	30.5	76.8	93.1	
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	0	0	0	3	0	0	0	0	0	0	0	0
6/3	0	0	0	0	0	0	0	0	0	0	0	0
6/4	0	0	0	5	0	0	0	0	0	0	4	1
6/5	3	3	0	0	3	0	3	0	0	3	3	1
6/6	6	0	8	0	0	0	6	0	0	1	0	2
6/7	0	0	0	0	0	0	0	3	0	0	0	0
6/8	3	0	3	0	3	0	3	0	6	1	0	2
6/9	3	0	30	0	8	0	0	0	3	3	0	5
6/10	3	0	9	6	0	0	3	6	0	0	3	3
6/11	0	0	53	3	3	13	20	3	3	0	0	10
6/12	0	0	43	3	9	12	6	0	6	3	6	8
6/13	0	6	34	5	37	14	92	12	0	3	11	20
6/14	0	0	22	14	39	11	77	11	3	6	6	18
6/15	0	0	84	19	34	38	56	23	21	21	19	30
6/16	0	3	13	28	35	8	84	17	25	28	35	24
6/17	3	6	40	25	50	35	149	19	14	5	47	35
6/18	9	36	214	5	81	57	248	17	14	16	253	70
6/19	14	14	113	40	61	64	179	28	11	8	156	53
6/20	43	6	136	50	79	285	85	119	55 <sup>h</sup>	6	46	86
6/21	38	0	35	29	98	307	470	86	29	30	176	112
6/22	31	5	67	8	112	444	113	64	74	14	190	93
6/23	69	20	143	36	300	299	321	99	73	152 <sup>h</sup>	95	151
6/24	26	85	134	20	301	229 <sup>h</sup>	272	126	100 <sup>h</sup>	96	114	139
6/25	74	163	148	21	322	101	223	208	161	135	61 <sup>h</sup>	156
6/26	39	211	137	37	343	159	235 <sup>h</sup>	234	156	251 <sup>h</sup>	115	180
6/27	71	62	156	26	88	106	294	234	168 <sup>h</sup>	121	184	132
6/28	140	17	276	121	257	91 <sup>h</sup>	462 <sup>h</sup>	475	179	125	89 <sup>h</sup>	214
6/29	102	14	150	295	242	358	629	806	77	379	126	305
6/30	51	3	88	268	139 <sup>h</sup>	358 <sup>h</sup>	629	328	373	393	193	263
7/1	182	22	163	328	36	466 <sup>h</sup>	870	424	461	159 <sup>h</sup>	265	311
7/2	314	69	361	324	47 <sup>h</sup>	527	907	520	367 <sup>h</sup>	145	182	358
7/3	253	156	108	320	83	667	500	391	302	236	461	301
7/4	319	248	379	382	146	814	487	484	273	324	334	386
7/5	85 <sup>h</sup>	79	333	444	156	1,013	205	577	244	336	207	347
7/6	23	39	320	270	106 <sup>h</sup>	1,065	425	613	194	530	99 <sup>h</sup>	358
7/7	40	61	307	225	168 <sup>h</sup>	955	225	487	81	386	324	293
7/8	67	70	261	95	166	559	131	361	188	167	402	206
7/9	55	25	328	57	173	601	59	139	249	173	320 <sup>h</sup>	186
7/10	22	146	150	54	67	948	141	97	310	246	192	218
7/11	77	295	99	61	144	1,295	135	116	42	353 <sup>h</sup>	224	262
7/12	31	278	123	45	49	759	776	134	136 <sup>h</sup>	82	149	241
7/13	75	357	96	43	68	477	137	128	241	256	296	188
7/14	66	169	323	66	60	477	103	247	304	495 <sup>h</sup>	327 <sup>h</sup>	231
7/15	26	15	270	66	53	218	128	340	194	289	374	160
7/16	25	235	178	35	80	46	191	281	63	147	124 <sup>h</sup>	128
7/17	92	161	204	19	55	363	463	195	61	76	124	169
7/18	15	58	47	80	55	401	557	276	97	339 <sup>h</sup>	148	192
7/19	4	50	19	80	30	406	521	286	85 <sup>h</sup>	128	170 <sup>h</sup>	161
7/20	10	40	33	68	76	514	562	322	73	76	35	177

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Date	2000 <sup>a,b,c</sup>	2001	2002 <sup>a</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>d</sup> :	11.5	30.6	51.6	23.4	24.2	197.7	180.6	49.5	45.0	84.9	63.6	
ANI <sup>e</sup> :	177.4	408.8	472.3	477.5	672.9	1151.5	1108.6	696.8	427.9	479.5	429.6	2000-
SUB <sup>f</sup> :	27.3	27.2	36.8	23.9	27.1	26.6	37.4	32.5	39.2	NA	NA	2009
COM <sup>g</sup> :	11.6	1.3	1.9	2.8	20.2	69.1	44.1	10.8	30.5	76.8	93.1	
7/21	11	17	36	87	128	341	368	277	182	153	150 <sup>h</sup>	160
7/22	17	11	29	31	83	276	298	142	200 <sup>h</sup>	225	73	131
7/23	4	17	41	71	19	267	231	27	130	199	125 <sup>h</sup>	101
7/24	0	17	41	107	3	154	40	94	148	171	138	77
7/25	8	15	60	101	11	177	167	79	71 <sup>h</sup>	37	82	73
7/26	2	8	61	75	44	194	136	135	78	54	76 <sup>h</sup>	79
7/27	6	14	25	38	38	42	61	99	29	99	35	45
7/28	4	4	59	33	88 <sup>h</sup>	20	66	70	77	81 <sup>h</sup>	54 <sup>h</sup>	50
7/29	3	11	33	29	50	62	69	37	28	49	88	37
7/30	4	2	28	27	45 <sup>h</sup>	118	59	63	43 <sup>h</sup>	39	36 <sup>h</sup>	43
7/31	6	6	46	31 <sup>h</sup>	49	157	46	31	28	76	10	47
8/1	1 <sup>h</sup>	0	20	5 <sup>h</sup>	55	155	25 <sup>h</sup>	26 <sup>h</sup>	55	55 <sup>h</sup>	13	40
8/2	5	5	2 <sup>h</sup>	5	19	76 <sup>h</sup>	14	23	16 <sup>h</sup>	36	13	20
8/3	5	0 <sup>h</sup>	21	0	30 <sup>h</sup>	91	26 <sup>h</sup>	83 <sup>h</sup>	13	33	9	30
8/4	5 <sup>h</sup>	0	9	4 <sup>h</sup>	8	137 <sup>h</sup>	27 <sup>h</sup>	38	10 <sup>h</sup>	38 <sup>h</sup>	9 <sup>h</sup>	28
8/5	2 <sup>h</sup>	5	2 <sup>h</sup>	0 <sup>h</sup>	7 <sup>h</sup>	89 <sup>h</sup>	18	22	18	28	11	19
8/6	0	3 <sup>h</sup>	5	0	3 <sup>h</sup>	33	19	27 <sup>h</sup>	18 <sup>h</sup>	32 <sup>h</sup>	9 <sup>h</sup>	14
8/7	2	5	5	0 <sup>h</sup>	11	49	20 <sup>h</sup>	4	17	20	7	13
8/8	1 <sup>h</sup>	7 <sup>h</sup>	8 <sup>h</sup>	2 <sup>h</sup>	16	40 <sup>h</sup>	11 <sup>h</sup>	7 <sup>h</sup>	8 <sup>h</sup>	9 <sup>h</sup>	4	11
8/9	0 <sup>h</sup>	3	12 <sup>h</sup>	2	5 <sup>h</sup>	24 <sup>h</sup>	2	7	7	7	6	7
8/10	0	8	2	2	10 <sup>h</sup>	2	17 <sup>h</sup>	7 <sup>h</sup>	2	14	8 <sup>h</sup>	6
8/11	0	4 <sup>h</sup>	2	4 <sup>h</sup>	5	12 <sup>h</sup>	8 <sup>h</sup>	3	5 <sup>h</sup>	7 <sup>h</sup>	2	5
8/12	0 <sup>h</sup>	0	6 <sup>h</sup>	4 <sup>h</sup>	4 <sup>h</sup>	19	0	4	7	9	2 <sup>h</sup>	5
8/13	0	0 <sup>h</sup>	0 <sup>h</sup>	4	10 <sup>h</sup>	4	2	7 <sup>h</sup>	5 <sup>h</sup>	15 <sup>h</sup>	0	5
8/14	0 <sup>h</sup>	2	2	4 <sup>h</sup>	8	21	7 <sup>h</sup>	1 <sup>h</sup>	4	3	4	5
8/15	0	1 <sup>h</sup>	2	4 <sup>h</sup>	7	19 <sup>h</sup>	2 <sup>h</sup>	4	2 <sup>h</sup>	0	2	4
8/16	2	0	0	4	6 <sup>h</sup>	10	2	0 <sup>h</sup>	5	7	0	4
8/17	0 <sup>h</sup>	0 <sup>h</sup>	0	3	8 <sup>h</sup>	3	1 <sup>h</sup>	0 <sup>h</sup>	9	4	0	3
8/18	0 <sup>h</sup>	0	0	3 <sup>h</sup>	0	9	0 <sup>h</sup>	2	9 <sup>h</sup>	2 <sup>h</sup>	0	2
8/19	0	0	0	3 <sup>h</sup>	0 <sup>h</sup>	5	0	0	0	2	0	1
8/20	0	4 <sup>h</sup>	0	3	0 <sup>h</sup>	11	2	0 <sup>h</sup>	0 <sup>h</sup>	0	0	2
8/21	0 <sup>h</sup>	0	0	3 <sup>h</sup>	3	15	1 <sup>h</sup>	0	0	2	0	2
8/22	0 <sup>h</sup>	0 <sup>h</sup>	1	3 <sup>h</sup>	3	0 <sup>h</sup>	0 <sup>h</sup>	0 <sup>h</sup>	7 <sup>h</sup>	4 <sup>h</sup>	0	2
8/23	2	0	2	3	1 <sup>h</sup>	0	0	0	2	2	0	1
8/24			0	3	1 <sup>h</sup>			0 <sup>h</sup>	0	2	0	1
8/25	h	h	h	h	6	h	h	h	h	h		
8/26				h	3							
8/27				h	0 <sup>h</sup>			h				
8/28				h	0		h					
8/29				h	0		h					
8/30					h		h					
8/31				h		h		h				
9/1				h			h					
9/2				h		h						
9/3				h								
9/4					h							
9/5						h						
9/6							h					
9/7								h				
9/8									h			

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*Note:* Date with no data indicates day when the project was not operational.

- <sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.
- <sup>b</sup> Year when the SEG escapement goal of 15,000-49,000 fish was not achieved at Kogruklu River weir.
- <sup>c</sup> Year when the SEG escapement goal of 210,000-480,000 fish was not achieved at Aniak River sonar.
- <sup>d</sup> Escapement at the Kogruklu River weir in thousands (X 1,000) of fish.
- <sup>e</sup> Escapement at the Aniak River sonar in thousands (X 1,000) of fish.
- <sup>f</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.
- <sup>g</sup> District 1 commercial harvest in thousands (X 1,000) of fish.
- <sup>h</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix E2.—Historical cumulative mean tidal CPUE for chum salmon catches in the Bethel test fishery, 2000–2010.

Date	2000 <sup>a,b,c</sup>	2001	2002 <sup>a</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>d</sup> :	11.5	30.6	51.6	23.4	24.2	197.7	180.6	49.5	45.0	84.9	63.6	2000-
ANI <sup>e</sup> :	177.4	408.8	472.3	477.5	672.9	1151.5	1108.6	696.8	427.9	479.5	429.6	2009
SUB <sup>f</sup> :	27.3	27.2	36.8	23.9	27.1	26.6	37.4	32.5	39.2	NA	NA	
COM <sup>g</sup> :	11.6	1.3	1.9	2.8	20.2	69.1	44.1	10.8	30.5	76.8	93.1	
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	0	0	0	3	0	0	0	0	0	0	0	0
6/3	0	0	0	3	0	0	0	0	0	0	0	0
6/4	0	0	0	8	0	0	0	0	0	0	4	1
6/5	3	3	0	0	11	0	3	0	0	3	6	2
6/6	9	3	8	0	11	0	9	0	0	4	6	4
6/7	9	3	8	0	11	0	9	3	0	4	6	5
6/8	12	3	11	0	14	0	12	3	6	6	6	7
6/9	15	3	41	0	22	0	12	3	9	9	6	11
6/10	18	3	50	6	22	0	15	8	9	9	9	14
6/11	18	3	103	8	25	13	35	11	12	9	9	24
6/12	18	3	146	11	34	25	41	11	18	12	15	32
6/13	18	9	180	17	71	38	133	23	18	14	26	52
6/14	18	9	202	30	110	49	210	34	20	20	31	70
6/15	18	9	285	49	144	87	266	57	41	42	50	100
6/16	18	11	299	77	179	95	350	74	66	69	86	124
6/17	20	17	338	103	229	131	499	94	80	75	133	159
6/18	29	53	552	108	310	188	747	110	94	91	386	228
6/19	43	67	665	148	371	252	927	138	106	99	542	282
6/20	86	73	801	198	450	537	1,012	258	161 <sup>h</sup>	105	588	368
6/21	124	73	836	226	547	844	1,482	343	190	135	764	480
6/22	155	78	903	235	659	1,288	1,595	407	264	149	954	573
6/23	224	98	1,047	270	959	1,587	1,916	506	337	301 <sup>h</sup>	1,049	725
6/24	250	183	1,181	291	1,260	1,817 <sup>h</sup>	2,188	632	437 <sup>h</sup>	397	1,163	864
6/25	324	346	1,329	312	1,583	1,918	2,412	840	598	532	1,224 <sup>h</sup>	1,019
6/26	363	557	1,466	349	1,926	2,077	2,646 <sup>h</sup>	1,075	753	783 <sup>h</sup>	1,340	1,200
6/27	435	619	1,622	375	2,014	2,183	2,941	1,308	921 <sup>h</sup>	904	1,524	1,332
6/28	574	637	1,897	496	2,271	2,273 <sup>h</sup>	3,402 <sup>h</sup>	1,783	1,099	1,028	1,613 <sup>h</sup>	1,546
6/29	676	651	2,048	791	2,514	2,631	4,031	2,589	1,176	1,407	1,738	1,851
6/30	727	654	2,136	1,059	2,653 <sup>h</sup>	2,989 <sup>h</sup>	4,660	2,917	1,550	1,800	1,931	2,114
7/1	908	676	2,299	1,387	2,690	3,455 <sup>h</sup>	5,530	3,341	2,010	1,959 <sup>h</sup>	2,196	2,426
7/2	1,222	744	2,660	1,711	2,736 <sup>h</sup>	3,982	6,437	3,861	2,377 <sup>h</sup>	2,104	2,378	2,784
7/3	1,475	900	2,768	2,031	2,819	4,650	6,937	4,252	2,680	2,339	2,838	3,085
7/4	1,794	1,148	3,147	2,413	2,965	5,464	7,424	4,736	2,953	2,663	3,172	3,471
7/5	1,879 <sup>h</sup>	1,227	3,480	2,857	3,120	6,477	7,629	5,314	3,197	3,000	3,380	3,818
7/6	1,901	1,267	3,800	3,127	3,226 <sup>h</sup>	7,542	8,053	5,927	3,391	3,530	3,478 <sup>h</sup>	4,176
7/7	1,941	1,328	4,107	3,352	3,395 <sup>h</sup>	8,496	8,278	6,414	3,471	3,917	3,802	4,470
7/8	2,008	1,397	4,367	3,447	3,561	9,055	8,409	6,775	3,660	4,083	4,205	4,676
7/9	2,063	1,423	4,696	3,503	3,733	9,656	8,468	6,914	3,909	4,256	4,524 <sup>h</sup>	4,862
7/10	2,085	1,568	4,846	3,558	3,800	10,604	8,609	7,011	4,219	4,502	4,716	5,080
7/11	2,162	1,863	4,945	3,618	3,945	11,899	8,743	7,127	4,260	4,855 <sup>h</sup>	4,940	5,342
7/12	2,193	2,141	5,068	3,663	3,993	12,658	9,519	7,261	4,396 <sup>h</sup>	4,937	5,089	5,583
7/13	2,268	2,498	5,165	3,706	4,061	13,135	9,656	7,389	4,637	5,193	5,385	5,771
7/14	2,334	2,667	5,488	3,772	4,122	13,612	9,759	7,636	4,941	5,688 <sup>h</sup>	5,712 <sup>h</sup>	6,002
7/15	2,360	2,682	5,758	3,838	4,175	13,830	9,887	7,976	5,135	5,977	6,087	6,162
7/16	2,385	2,917	5,936	3,873	4,254	13,876	10,078	8,257	5,198	6,124	6,210 <sup>h</sup>	6,290
7/17	2,477	3,078	6,140	3,893	4,309	14,239	10,541	8,452	5,259	6,200	6,334	6,459
7/18	2,492	3,136	6,187	3,973	4,364	14,640	11,098	8,728	5,355	6,538 <sup>h</sup>	6,482	6,651
7/19	2,496	3,185	6,206	4,052	4,395	15,047	11,619	9,014	5,441 <sup>h</sup>	6,667	6,652 <sup>h</sup>	6,812
7/20	2,506	3,225	6,238	4,120	4,471	15,560	12,181	9,337	5,514	6,742	6,686	6,989
7/21	2,517	3,242	6,274	4,207	4,599	15,901	12,549	9,613	5,696	6,895	6,836 <sup>h</sup>	7,149
7/22	2,534	3,254	6,302	4,238	4,681	16,177	12,847	9,755	5,896 <sup>h</sup>	7,120	6,909	7,281

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Appendix E2.–Page 2 of 3.

Date	2000 <sup>a,b,c</sup>	2001	2002 <sup>a</sup>	2003	2004	2005	2006	2007 <sup>a</sup>	2008	2009 <sup>a</sup>	2010	Average
KOG <sup>d</sup> :	11.5	30.6	51.6	23.4	24.2	197.7	180.6	49.5	45.0	84.9	63.6	
ANI <sup>e</sup> :	177.4	408.8	472.3	477.5	672.9	1151.5	1108.6	696.8	427.9	479.5	429.6	2000-
SUB <sup>f</sup> :	27.3	27.2	36.8	23.9	27.1	26.6	37.4	32.5	39.2	NA	NA	2009
COM <sup>g</sup> :	11.6	1.3	1.9	2.8	20.2	69.1	44.1	10.8	30.5	76.8	93.1	
7/23	2,538	3,271	6,343	4,309	4,700	16,445	13,078	9,782	6,026	7,319	7,034 <sup>h</sup>	7,381
7/24	2,538	3,288	6,384	4,416	4,703	16,598	13,118	9,876	6,174	7,490	7,172	7,459
7/25	2,546	3,303	6,444	4,516	4,714	16,775	13,284	9,955	6,245 <sup>h</sup>	7,527	7,253	7,531
7/26	2,548	3,312	6,506	4,592	4,758	16,969	13,421	10,090	6,322	7,581	7,329 <sup>h</sup>	7,610
7/27	2,554	3,326	6,530	4,630	4,797	17,011	13,481	10,189	6,352	7,679	7,364	7,655
7/28	2,557	3,330	6,590	4,663	4,884 <sup>h</sup>	17,031	13,547	10,259	6,429	7,760 <sup>h</sup>	7,419 <sup>h</sup>	7,705
7/29	2,560	3,340	6,623	4,692	4,935	17,094	13,616	10,296	6,456	7,809	7,507	7,742
7/30	2,564	3,342	6,651	4,719	4,980 <sup>h</sup>	17,211	13,675	10,359	6,499 <sup>h</sup>	7,848	7,542 <sup>h</sup>	7,785
7/31	2,570	3,348	6,697	4,750 <sup>h</sup>	5,029	17,368	13,721	10,390	6,527	7,924	7,552	7,832
8/1	2,571 <sup>h</sup>	3,348	6,717	4,755 <sup>h</sup>	5,084	17,523	13,746 <sup>h</sup>	10,416 <sup>h</sup>	6,582	7,979 <sup>h</sup>	7,565	7,872
8/2	2,576	3,353	6,719 <sup>h</sup>	4,760	5,103	17,599 <sup>h</sup>	13,760	10,439	6,598 <sup>h</sup>	8,015	7,579	7,892
8/3	2,581	3,353 <sup>h</sup>	6,740	4,760	5,133 <sup>h</sup>	17,690	13,786 <sup>h</sup>	10,522 <sup>h</sup>	6,611	8,048	7,588	7,922
8/4	2,586 <sup>h</sup>	3,353	6,748	4,764 <sup>h</sup>	5,140	17,827 <sup>h</sup>	13,814 <sup>h</sup>	10,561	6,621 <sup>h</sup>	8,086 <sup>h</sup>	7,597 <sup>h</sup>	7,950
8/5	2,588 <sup>h</sup>	3,358	6,751 <sup>h</sup>	4,764 <sup>h</sup>	5,147 <sup>h</sup>	17,916 <sup>h</sup>	13,832	10,583	6,639	8,113	7,607	7,969
8/6	2,588	3,361 <sup>h</sup>	6,755	4,764	5,149 <sup>h</sup>	17,948	13,851	10,609 <sup>h</sup>	6,658 <sup>h</sup>	8,146 <sup>h</sup>	7,617 <sup>h</sup>	7,983
8/7	2,590	3,367	6,760	4,764 <sup>h</sup>	5,161	17,998	13,871 <sup>h</sup>	10,613	6,675	8,166	7,623	7,996
8/8	2,590 <sup>h</sup>	3,373 <sup>h</sup>	6,769 <sup>h</sup>	4,765 <sup>h</sup>	5,177	18,038 <sup>h</sup>	13,883 <sup>h</sup>	10,620 <sup>h</sup>	6,683 <sup>h</sup>	8,174 <sup>h</sup>	7,627	8,007
8/9	2,590 <sup>h</sup>	3,376	6,781 <sup>h</sup>	4,767	5,182 <sup>h</sup>	18,062 <sup>h</sup>	13,884	10,627	6,690	8,182	7,633	8,014
8/10	2,590	3,384	6,783	4,769	5,192 <sup>h</sup>	18,064	13,902 <sup>h</sup>	10,634 <sup>h</sup>	6,692	8,196	7,641 <sup>h</sup>	8,021
8/11	2,590	3,388 <sup>h</sup>	6,784	4,772 <sup>h</sup>	5,197	18,077 <sup>h</sup>	13,910 <sup>h</sup>	10,637	6,696 <sup>h</sup>	8,203 <sup>h</sup>	7,643	8,026
8/12	2,590 <sup>h</sup>	3,388	6,791 <sup>h</sup>	4,776 <sup>h</sup>	5,200 <sup>h</sup>	18,096	13,910	10,641	6,704	8,212	7,645 <sup>h</sup>	8,031
8/13	2,590	3,388 <sup>h</sup>	6,791 <sup>h</sup>	4,779	5,211 <sup>h</sup>	18,099	13,912	10,648 <sup>h</sup>	6,709 <sup>h</sup>	8,227 <sup>h</sup>	7,645	8,035
8/14	2,590 <sup>h</sup>	3,390	6,792	4,783 <sup>h</sup>	5,219	18,121	13,919 <sup>h</sup>	10,649 <sup>h</sup>	6,713	8,230	7,649	8,041
8/15	2,590	3,391 <sup>h</sup>	6,794	4,786 <sup>h</sup>	5,226	18,139 <sup>h</sup>	13,921 <sup>h</sup>	10,653	6,714 <sup>h</sup>	8,230	7,651	8,044
8/16	2,592	3,391	6,794	4,790	5,232 <sup>h</sup>	18,149	13,923	10,653 <sup>h</sup>	6,720	8,238	7,651	8,048
8/17	2,592 <sup>h</sup>	3,391 <sup>h</sup>	6,794	4,793	5,240 <sup>h</sup>	18,153	13,924 <sup>h</sup>	10,653 <sup>h</sup>	6,729	8,241	7,651	8,051
8/18	2,592 <sup>h</sup>	3,391	6,794	4,796 <sup>h</sup>	5,240	18,162	13,924 <sup>h</sup>	10,654	6,737 <sup>h</sup>	8,243 <sup>h</sup>	7,651	8,053
8/19	2,592	3,391	6,794	4,800 <sup>h</sup>	5,240 <sup>h</sup>	18,166	13,924	10,654	6,737	8,245	7,651	8,054
8/20	2,592	3,395 <sup>h</sup>	6,794	4,803	5,240 <sup>h</sup>	18,177	13,925	10,654 <sup>h</sup>	6,737 <sup>h</sup>	8,245	7,651	8,056
8/21	2,592 <sup>h</sup>	3,395	6,794	4,806 <sup>h</sup>	5,242	18,192	13,926 <sup>h</sup>	10,654	6,737	8,247	7,651	8,059
8/22	2,592 <sup>h</sup>	3,395 <sup>h</sup>	6,795	4,809 <sup>h</sup>	5,245	18,192 <sup>h</sup>	13,926 <sup>h</sup>	10,654 <sup>h</sup>	6,744 <sup>h</sup>	8,250 <sup>h</sup>	7,651	8,060
8/23	2,594	3,395	6,796	4,812	5,247 <sup>h</sup>	18,192	13,926	10,654	6,746	8,252	7,651	8,062
8/24			6,796	4,815	5,248 <sup>h</sup>			10,654 <sup>h</sup>	6,746	8,254	7,651	7,086
8/25		h		h	5,254		h	h	h			5,254
8/26				h	5,257							5,257
8/27					5,257 <sup>h</sup>							5,257
8/28				h	5,257			h				5,257
8/29				h	5,257		h					5,257
8/30					h			h				
8/31							h					
9/1							h					
9/2							h					
9/3							h					
9/4							h					
9/5							h					
9/6							h					
9/7							h					
9/8							h					
Totals	2,594	3,395	6,796	4,815	5,257	18,192	13,926	10,654 <sup>h</sup>	6,746	8,254	7,651	8,063

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## Appendix E2.–Page 3 of 3.

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*Note:* Date with no data indicates day when the project was not operational.

- <sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.
- <sup>b</sup> Year when the SEG escapement goal of 15,000-49,000 fish was not achieved at Kogrukluuk River weir.
- <sup>c</sup> Year when the SEG escapement goal of 210,000-480,000 fish was not achieved at Aniak River sonar.
- <sup>d</sup> Escapement at the Kogrukluuk River weir in thousands (X 1,000) of fish.
- <sup>e</sup> Escapement at the Aniak River sonar in thousands (X 1,000) of fish.
- <sup>f</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.
- <sup>g</sup> District 1 commercial harvest in thousands (X 1,000) of fish.
- <sup>h</sup> indicates days when commercial fishing periods occurred in District 1.

Appendix E3.—Historical percent passage (2000–2010) of chum salmon at the Bethel test fish site, Bethel test fishery, 2010.

Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 2000- 2009
6/1												
6/2		0	0	0	0	0	0	0	0	0	0	0
6/3		0	0	0	0	0	0	0	0	0	0	0
6/4		0	0	0	0	0	0	0	0	0	0	0
6/5	0	0	0	0	0	0	0	0	0	0	0	0
6/6	0	0	0	0	0	0	0	0	0	0	0	0
6/7	0	0	0	0	0	0	0	0	0	0	0	0
6/8	0	0	0	0	0	0	0	0	0	0	0	0
6/9	1	0	1	0	0	0	0	0	0	0	0	0
6/10	1	0	1	0	0	0	0	0	0	0	0	0
6/11	1	0	2	0	0	0	0	0	0	0	0	0
6/12	1	0	2	0	1	0	0	0	0	0	0	0
6/13	1	0	3	0	1	0	1	0	0	0	0	1
6/14	1	0	3	1	2	0	2	0	0	0	0	1
6/15	1	0	4	1	3	0	2	1	1	1	1	1
6/16	1	0	4	2	3	1	3	1	1	1	1	2
6/17	1	0	5	2	4	1	4	1	1	1	2	2
6/18	1	2	8	2	6	1	5	1	1	1	5	3
6/19	2	2	10	3	7	1	7	1	2	1	7	4
6/20	3	2	12	4	9	3	7	2	2	1	8	5
6/21	5	2	12	5	10	5	11	3	3	2	10	6
6/22	6	2	13	5	13	7	11	4	4	2	12	7
6/23	9	3	15	6	18	9	14	5	5	4	14	9
6/24	10	5	17	6	24	10	16	6	6	5	15	11
6/25	12	10	20	6	30	11	17	8	9	6	16	13
6/26	14	16	22	7	37	11	19	10	11	9	18	16
6/27	17	18	24	8	38	12	21	12	14	11	20	18
6/28	22	19	28	10	43	12	24	17	16	12	21	20
6/29	26	19	30	16	48	14	29	24	17	17	23	24
6/30	28	19	31	22	51	16	33	27	23	22	25	27
7/1	35	20	34	29	51	19	31	30	24	29	31	31
7/2	47	22	39	36	52	22	46	36	35	31	36	36
7/3	57	27	41	42	54	26	50	40	40	28	37	40
7/4	69	34	46	50	57	30	53	44	44	32	41	46
7/5	72	36	51	59	59	36	55	50	47	36	44	50
7/6	73	37	56	65	61	41	58	56	50	43	45	54
7/7	75	39	60	70	65	47	59	60	51	47	50	57
7/8	77	41	64	72	68	50	60	64	54	49	55	60
7/9	80	42	69	73	71	53	61	65	58	52	59	62
7/10	80	46	71	74	72	58	62	66	63	55	62	65
7/11	83	55	73	75	75	65	63	67	63	59	65	68
7/12	85	63	75	76	76	70	68	68	65	60	67	71
7/13	87	74	76	77	77	72	69	69	69	63	70	73
7/14	90	79	81	78	79	75	70	72	73	69	75	76
7/15	91	79	85	80	80	76	71	75	76	72	80	78
7/16	92	86	87	80	81	76	72	77	77	74	81	80
7/17	95	91	90	81	82	78	76	79	78	75	83	83
7/18	96	92	91	83	83	80	80	82	79	79	85	85
7/19	96	94	91	84	84	83	83	85	81	81	87	86
7/20	97	95	92	86	85	86	87	88	82	82	87	88
7/21	97	95	92	87	88	87	90	90	84	84	89	90
7/22	98	96	93	88	89	89	92	92	87	86	90	91
7/23	98	96	93	90	90	90	94	92	89	89	92	92
7/24	98	97	94	92	90	91	94	93	92	91	94	93
7/25	98	97	95	94	90	92	95	93	93	91	95	94
7/26	98	98	96	95	91	93	96	95	94	92	96	95
7/27	98	98	96	96	91	94	97	96	94	93	96	95
7/28	99	98	97	97	93	94	97	96	95	94	97	96
7/29	99	98	97	98	94	94	98	97	96	95	98	96
7/30	99	98	98	98	95	95	98	97	96	95	99	97
7/31	99	99	99	99	96	95	99	98	97	96	99	98

Note: The boxes represent the central 50% of the run and the shaded cells represent the median passage date of the run.

**APPENDIX F**  
**COHO SALMON**

Appendix F1.—Historic daily mean tidal CPUE for coho salmon catches in the Bethel test fishery, 2000–2010.

Date	2000	2001 <sup>a</sup>	2002	2003 <sup>a</sup>	2004	2005	2006	2007 <sup>a</sup>	2008	2009	2010	Average
KOG <sup>b</sup> :	33.1	19.4	14.5	74.6	27.0	24.1	17.0	27.0	29.7	23.0	14.0	2000-
SUB <sup>c</sup> :	21.4	17.8	18.0	20.9	20.9	15.1	21.1	16.9	26.0	NA	NA	2009
COM <sup>d</sup> :	259.7	193.0	83.5	284.0	435.4	142.3	185.6	141.0	142.9	104.5	58.0	58.0
7/8	3	0	0	1	0	0	0	5	0	0	0	1
7/9	2	0	0	2	9	0	0	0	0	0	0 <sup>e</sup>	1
7/10	0	0	2	0	3	0	0	0	0	0	0	0
7/11	0	1	0	3	5	0	3	0	6	5 <sup>e</sup>	0	2
7/12	2	6	0	5	0	0	16	0	0 <sup>e</sup>	3	0	3
7/13	0	0	1	5	6	0	0	0	0	1	0	1
7/14	2	0	1	25	5	0	0	15	3	0 <sup>e</sup>	0 <sup>e</sup>	5
7/15	4	0	1	38	3	2	1	7	8	0	0	6
7/16	21	7	2	21	3	0	7	13	14	4	3 <sup>e</sup>	9
7/17	41	4	2	17	22	5	22	24	22	0	0	16
7/18	13	4	2	50	22	6	50	19	16	21 <sup>e</sup>	0	20
7/19	6	3	0	50	42	13	50	39	25 <sup>e</sup>	16	3 <sup>e</sup>	24
7/20	4	4	0	100	54	16	78	28	34	29	2	35
7/21	37	0	2	113	55	2	54	20	40	61	6 <sup>e</sup>	38
7/22	46	8	8	44	109	7	40	51	63 <sup>e</sup>	124	17	50
7/23	72	10	11	61	48	6	31	16	55	91	11 <sup>e</sup>	40
7/24	110	9	17	82	63	18	13	51	80	81	24	52
7/25	47	4	46	225	92	16	18	82	114 <sup>e</sup>	55	15	70
7/26	41	8	54	160	106	20	26	110	70	114	24 <sup>e</sup>	71
7/27	136	65	96	228	47	46	37	72	46	115	21	89
7/28	224	0	107	160	136 <sup>e</sup>	29	118	54	190	211 <sup>e</sup>	47 <sup>e</sup>	123
7/29	153	65	127	91	265	34	179	92	235	106	58	135
7/30	108	23	127	116	262 <sup>e</sup>	43	143	93	196 <sup>e</sup>	75	145 <sup>e</sup>	119
7/31	324	86	189	242 <sup>e</sup>	365	82	99	146	177	306	48	202
8/1	516 <sup>e</sup>	31	335	98 <sup>e</sup>	314	142	62 <sup>e</sup>	72 <sup>e</sup>	223	175 <sup>e</sup>	67	197
8/2	228	46	63 <sup>e</sup>	65	139	74 <sup>e</sup>	111	163	221 <sup>e</sup>	184	43	129
8/3	373	11 <sup>e</sup>	213	66	216 <sup>e</sup>	62	92 <sup>e</sup>	348 <sup>e</sup>	192	223	49	180
8/4	519 <sup>e</sup>	29	78	45 <sup>e</sup>	211	93 <sup>e</sup>	94 <sup>e</sup>	456	224 <sup>e</sup>	190 <sup>e</sup>	53 <sup>e</sup>	194
8/5	413 <sup>e</sup>	110	89 <sup>e</sup>	35 <sup>e</sup>	219 <sup>e</sup>	177 <sup>e</sup>	103	258	306	228	80	194
8/6	161	194 <sup>e</sup>	196	50	163 <sup>e</sup>	220	113	257 <sup>e</sup>	247 <sup>e</sup>	176 <sup>e</sup>	91 <sup>e</sup>	178
8/7	259	160	191	75 <sup>e</sup>	274	354	108 <sup>e</sup>	15	225	167	208	183
8/8	65 <sup>e</sup>	298 <sup>e</sup>	256 <sup>e</sup>	211 <sup>e</sup>	339	317 <sup>e</sup>	99 <sup>e</sup>	84 <sup>e</sup>	132 <sup>e</sup>	185 <sup>e</sup>	230	198
8/9	134 <sup>e</sup>	456	274 <sup>e</sup>	228	145 <sup>e</sup>	211 <sup>e</sup>	60	129	210	186	129	203
8/10	49	328	63	71	554 <sup>e</sup>	180	192 <sup>e</sup>	44 <sup>e</sup>	29	134	246 <sup>e</sup>	164
8/11	417	326 <sup>e</sup>	278	95 <sup>e</sup>	210	112 <sup>e</sup>	173 <sup>e</sup>	59	172 <sup>e</sup>	97 <sup>e</sup>	146	194
8/12	142 <sup>e</sup>	207	376 <sup>e</sup>	197 <sup>e</sup>	189 <sup>e</sup>	120	176	29	228	122	69 <sup>e</sup>	179
8/13	182	36 <sup>e</sup>	144 <sup>e</sup>	301	363 <sup>e</sup>	38	231	80 <sup>e</sup>	189 <sup>e</sup>	187 <sup>e</sup>	10	175
8/14	64 <sup>e</sup>	61	53	206 <sup>e</sup>	233	85	106 <sup>e</sup>	53 <sup>e</sup>	126	193	31	118
8/15	21	186 <sup>e</sup>	182	229 <sup>e</sup>	468	81 <sup>e</sup>	167 <sup>e</sup>	70	219 <sup>e</sup>	76	18	170
8/16	100	42	20	202	268 <sup>e</sup>	128	48	24 <sup>e</sup>	248	79 <sup>e</sup>	12	116
8/17	83 <sup>e</sup>	36 <sup>e</sup>	100	254	167 <sup>e</sup>	100	62 <sup>e</sup>	19 <sup>e</sup>	233	96	12	115
8/18	28 <sup>e</sup>	8	220	115 <sup>e</sup>	79	126	82 <sup>e</sup>	45	181 <sup>e</sup>	41 <sup>e</sup>	0	92
8/19	19	16	59	215 <sup>e</sup>	112 <sup>e</sup>	160	58	57	137	55	38	89
8/20	35	13 <sup>e</sup>	60	68	48 <sup>e</sup>	170	19	55 <sup>e</sup>	139 <sup>e</sup>	45	35	65
8/21	13 <sup>e</sup>	8	78	18 <sup>e</sup>	64	171	18 <sup>e</sup>	39	49	80	30	54
8/22	13 <sup>e</sup>	8 <sup>e</sup>	76	52 <sup>e</sup>	105	115 <sup>e</sup>	4 <sup>e</sup>	16 <sup>e</sup>	55 <sup>e</sup>	74 <sup>e</sup>	2	52
8/23	8	0	53	34	88 <sup>e</sup>	99	0	7	37	61	4	39
8/24			38	51	81 <sup>e</sup>		<sup>e</sup>	13 <sup>e</sup>	81	23	2	48

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Appendix F1.–Page 2 of 2.

Date	2000	2001 <sup>a</sup>	2002	2003 <sup>a</sup>	2004	2005	2006	2007 <sup>a</sup>	2008	2009	2010	Average
KOG <sup>b</sup> :	33.1	19.4	14.5	74.6	27.0	24.1	17.0	27.0	29.7	23.0	14.0	
SUB <sup>c</sup> :	21.4	17.8	18.0	20.9	20.9	15.1	21.1	16.9	26.0	NA	NA	2000-
COM <sup>d</sup> :	259.7	193.0	83.5	284.0	435.4	142.3	185.6	141.0	142.9	104.5	58.0	2009
8/25	e	e		e	75		e	e		e		
8/26				e	119							
8/27					70 <sup>e</sup>							
8/28				e	64			e				
8/29				e	81		e					
8/30					e			e				
8/31												
9/1				e			e					
2/2				e		e						
9/3				e								
9/4					e							
9/5												
9/6					e							
9/7												
9/8				e								

<sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.

<sup>b</sup> Escapement at the Kogruklu River weir in thousands (X 1,000) of fish.

<sup>c</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.

<sup>d</sup> District 1 commercial harvest in thousands (X 1,000) of fish.

<sup>e</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix F2.—Historic cumulative mean tidal CPUE for coho salmon catches in the Bethel test fish, 2000–2010.

Date	2000	2001 <sup>a</sup>	2002	2003 <sup>a</sup>	2004	2005	2006	2007 <sup>a</sup>	2008	2009	2010	Average
KOG <sup>b</sup> :	33.1	19.4	14.5	74.6	27.0	24.1	17.0	27.0	29.7	23.0	14.0	2000-
SUB <sup>c</sup> :	21.4	17.8	18.0	20.9	20.9	15.1	21.1	16.9	26.0	NA	NA	2009
COM <sup>d</sup> :	259.7	193.0	83.5	284.0	435.4	142.3	185.6	141.0	142.9	104.5	58.0	14
7/8	3	0	0	1	0	0	0	5	0	0	0	1
7/9	5	0	0	2	9	0	0	5	0	0	0 <sup>e</sup>	2
7/10	5	0	2	2	11	0	0	5	0	0	0	3
7/11	5	1	2	5	16	0	3	5	6	5 <sup>e</sup>	0	5
7/12	6	7	2	11	16	0	18	5	6 <sup>e</sup>	8	0	8
7/13	6	7	3	16	23	0	18	5	6	10	0	9
7/14	8	7	4	41	27	0	18	20	8	10 <sup>e</sup>	0 <sup>e</sup>	14
7/15	12	7	5	78	30	2	19	26	16	10	0	21
7/16	33	14	7	99	33	2	26	39	30	14	3 <sup>e</sup>	30
7/17	74	17	9	116	56	7	48	63	52	14	3	46
7/18	87	21	11	166	78	13	98	82	68	35 <sup>e</sup>	3	66
7/19	93	24	11	217	120	26	148	120	93 <sup>e</sup>	51	5 <sup>e</sup>	90
7/20	97	28	11	316	173	41	226	148	127	80	7	125
7/21	134	28	12	429	228	44	280	169	167	141	13 <sup>e</sup>	163
7/22	180	36	21	473	337	51	320	219	231 <sup>e</sup>	265	30	213
7/23	251	46	32	534	385	57	352	235	285	356	40 <sup>e</sup>	253
7/24	362	55	49	616	447	74	365	286	365	436	64	306
7/25	409	59	95	841	539	90	382	368	480 <sup>e</sup>	491	79	375
7/26	450	67	148	1,001	645	110	408	478	550	606	103 <sup>e</sup>	446
7/27	585	131	244	1,229	692	156	445	550	596	721	124	535
7/28	809	131	351	1,389	828 <sup>e</sup>	185	563	605	785	931 <sup>e</sup>	170 <sup>e</sup>	658
7/29	962	196	478	1,479	1,093	219	742	697	1,020	1,037	229	792
7/30	1,070	219	605	1,596	1,354 <sup>e</sup>	262	885	790	1,216 <sup>e</sup>	1,112	374 <sup>e</sup>	911
7/31	1,395	305	794	1,838 <sup>e</sup>	1,720	344	985	936	1,393	1,418	421	1,113
8/1	1,910 <sup>e</sup>	336	1,129	1,936 <sup>e</sup>	2,034	486	1,047 <sup>e</sup>	1,008 <sup>e</sup>	1,616	1,593 <sup>e</sup>	488	1,310
8/2	2,138	382	1,192 <sup>e</sup>	2,001	2,173	561 <sup>e</sup>	1,158	1,171	1,837 <sup>e</sup>	1,777	531	1,439
8/3	2,512	393 <sup>e</sup>	1,405	2,067	2,389 <sup>e</sup>	622	1,250 <sup>e</sup>	1,519 <sup>e</sup>	2,030	2,000	580	1,619
8/4	3,031 <sup>e</sup>	422	1,483	2,112 <sup>e</sup>	2,599	715 <sup>e</sup>	1,344 <sup>e</sup>	1,975	2,253 <sup>e</sup>	2,190 <sup>e</sup>	634 <sup>e</sup>	1,812
8/5	3,444 <sup>e</sup>	532	1,572 <sup>e</sup>	2,147 <sup>e</sup>	2,819 <sup>e</sup>	892 <sup>e</sup>	1,447	2,234	2,560	2,418	713	2,006
8/6	3,605	726 <sup>e</sup>	1,768	2,197	2,982 <sup>e</sup>	1,112	1,560	2,491 <sup>e</sup>	2,806 <sup>e</sup>	2,595 <sup>e</sup>	804 <sup>e</sup>	2,184
8/7	3,864	887	1,959	2,272 <sup>e</sup>	3,255	1,466	1,668 <sup>e</sup>	2,506	3,032	2,762	1,011	2,367
8/8	3,929 <sup>e</sup>	1,184 <sup>e</sup>	2,215 <sup>e</sup>	2,483 <sup>e</sup>	3,594	1,783 <sup>e</sup>	1,767 <sup>e</sup>	2,590 <sup>e</sup>	3,163 <sup>e</sup>	2,946 <sup>e</sup>	1,242	2,566
8/9	4,063 <sup>e</sup>	1,640	2,489 <sup>e</sup>	2,711	3,740 <sup>e</sup>	1,994 <sup>e</sup>	1,827	2,719	3,373	3,132	1,371	2,769
8/10	4,112	1,968	2,553	2,782	4,294 <sup>e</sup>	2,174	2,019 <sup>e</sup>	2,762 <sup>e</sup>	3,402	3,266	1,616 <sup>e</sup>	2,933
8/11	4,528	2,294 <sup>e</sup>	2,831	2,877 <sup>e</sup>	4,505	2,286 <sup>e</sup>	2,193 <sup>e</sup>	2,821	3,573 <sup>e</sup>	3,363 <sup>e</sup>	1,762	3,127
8/12	4,670 <sup>e</sup>	2,501	3,207 <sup>e</sup>	3,074 <sup>e</sup>	4,694 <sup>e</sup>	2,406	2,369	2,850	3,801	3,485	1,831 <sup>e</sup>	3,306
8/13	4,852	2,537 <sup>e</sup>	3,351 <sup>e</sup>	3,375	5,057 <sup>e</sup>	2,444	2,601	2,931 <sup>e</sup>	3,990 <sup>e</sup>	3,672 <sup>e</sup>	1,840	3,481
8/14	4,916 <sup>e</sup>	2,598	3,403	3,581 <sup>e</sup>	5,290	2,529	2,707 <sup>e</sup>	2,983 <sup>e</sup>	4,115	3,865	1,871	3,599
8/15	4,937	2,784 <sup>e</sup>	3,585	3,810 <sup>e</sup>	5,758	2,610 <sup>e</sup>	2,874 <sup>e</sup>	3,053	4,334 <sup>e</sup>	3,940	1,889	3,768
8/16	5,037	2,826	3,605	4,012	6,026 <sup>e</sup>	2,737	2,921	3,077 <sup>e</sup>	4,582	4,019 <sup>e</sup>	1,901	3,884
8/17	5,120 <sup>e</sup>	2,862 <sup>e</sup>	3,705	4,266	6,193 <sup>e</sup>	2,837	2,984 <sup>e</sup>	3,096 <sup>e</sup>	4,815	4,115	1,913	3,999
8/18	5,148 <sup>e</sup>	2,870	3,925	4,380 <sup>e</sup>	6,272	2,963	3,065 <sup>e</sup>	3,140	4,995 <sup>e</sup>	4,156 <sup>e</sup>	1,913	4,092
8/19	5,167	2,887	3,984	4,596 <sup>e</sup>	6,385 <sup>e</sup>	3,123	3,123	3,197	5,133	4,211	1,951	4,181
8/20	5,203	2,899 <sup>e</sup>	4,044	4,663	6,433 <sup>e</sup>	3,292	3,142	3,252 <sup>e</sup>	5,272 <sup>e</sup>	4,256	1,986	4,246
8/21	5,215 <sup>e</sup>	2,907	4,122	4,682 <sup>e</sup>	6,497	3,464	3,160 <sup>e</sup>	3,291	5,320	4,336	2,016	4,299
8/22	5,229 <sup>e</sup>	2,914 <sup>e</sup>	4,198	4,734 <sup>e</sup>	6,602	3,579 <sup>e</sup>	3,164 <sup>e</sup>	3,307 <sup>e</sup>	5,376 <sup>e</sup>	4,411 <sup>e</sup>	2,018	4,351
8/23	5,236	2,914	4,251	4,768	6,690 <sup>e</sup>	3,678	3,164	3,314	5,413	4,472	2,022	4,390
8/24				4,289	4,819	6,771 <sup>e</sup>		3,328 <sup>e</sup>	5,494	4,495	2,024	4,866

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Appendix F2.–Page 2 of 2.

Date	2000	2001 <sup>a</sup>	2002	2003 <sup>a</sup>	2004	2005	2006	2007 <sup>a</sup>	2008	2009	2010	Average
KOG <sup>b</sup> :	33.1	19.4	14.5	74.6	27.0	24.1	17.0	27.0	29.7	23.0	14.0	
SUB <sup>c</sup> :	21.4	17.8	18.0	20.9	20.9	15.1	21.1	16.9	26.0	NA	NA	2000-
COM <sup>d</sup> :	259.7	193.0	83.5	284.0	435.4	142.3	185.6	141.0	142.9	104.5	58.0	2009
8/25	e	e		e	6,846		e	e		e		6,846
8/26				e	6,965							6,965
8/27					7,035 <sup>e</sup>							7,035
8/28				e	7,099			e				7,099
8/29				e	7,180		e					7,180
8/30					e			e				
8/31												
9/1			e			e						
9/2			e			e						
9/3			e									
9/4				e								
9/5				e								
9/6					e							
9/7						e						
9/8					e							
Totals	5,236	2,914	4,289	4,819	7,180	3,678	3,164	3,328 <sup>e</sup>	5,494	4,495	2,024	4,460

<sup>a</sup> Water level considered similar to present year based on the USGS gauging station at Crooked Creek.

<sup>b</sup> Escapement at the Kogruklu River weir in thousands (X 1,000) of fish.

<sup>c</sup> Subsistence harvest from the communities of Bethel and downstream in thousands (X 1,000) of fish.

<sup>d</sup> District 1 commercial harvest in thousands (X 1,000) of fish.

<sup>e</sup> Indicates days when commercial fishing periods occurred in District 1.

Appendix F3.—Historic percent passage (2000–2010) of coho salmon at the Bethel test fish site, Bethel test fishery, 2010.

Date	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average 2000-2009
7/8	0	0	0	0	0	0	0	0	0	0	0	0
7/9	0	0	0	0	0	0	0	0	0	0	0	0
7/10	0	0	0	0	0	0	0	0	0	0	0	0
7/11	0	0	0	0	0	0	0	0	0	0	0	0
7/12	0	0	0	0	0	0	1	0	0	0	0	0
7/13	0	0	0	0	0	0	1	0	0	0	0	0
7/14	0	0	0	1	0	0	1	1	0	0	0	0
7/15	0	0	0	2	0	0	1	1	0	0	0	0
7/16	1	0	0	2	0	0	1	1	1	0	0	1
7/17	1	1	0	2	1	0	2	2	1	0	0	1
7/18	2	1	0	3	1	0	3	2	1	1	0	2
7/19	2	1	0	5	2	1	5	4	2	1	0	2
7/20	2	1	0	7	3	1	7	4	2	2	0	3
7/21	3	1	0	9	3	1	9	5	3	3	1	4
7/22	3	1	0	10	5	1	10	7	4	6	1	5
7/23	5	2	1	11	6	2	11	7	5	8	2	6
7/24	7	2	1	13	7	2	12	9	7	10	3	7
7/25	8	2	2	18	8	2	12	11	9	11	4	8
7/26	9	2	3	21	10	3	13	14	10	14	5	10
7/27	11	5	6	26	10	4	14	17	11	16	6	12
7/28	15	5	8	29	12	5	18	18	15	21	8	15
7/29	18	7	11	31	16	6	23	21	19	23	11	18
7/30	20	8	14	33	20	7	28	24	22	25	18	20
7/31	27	10	19	39	26	9	31	28	26	32	21	25
8/1	36	12	27	41	30	13	33	30	30	36	24	29
8/2	41	13	28	42	32	15	37	35	34	40	26	32
8/3	48	13	33	43	36	17	40	46	37	45	29	36
8/4	58	14	35	44	39	19	42	60	42	49	31	40
8/5	66	18	37	45	42	24	46	67	47	54	35	45
8/6	69	25	42	46	45	30	49	75	52	58	40	49
8/7	74	30	46	48	49	40	53	76	56	62	50	53
8/8	75	41	52	52	54	48	56	78	58	66	61	58
8/9	78	56	59	57	56	54	58	82	62	70	68	63
8/10	79	68	60	58	64	59	64	83	63	73	80	67
8/11	86	79	67	60	67	62	69	85	66	75	87	72
8/12	89	86	75	64	70	65	75	86	70	78	91	76
8/13	93	87	79	71	76	66	82	88	74	82	91	80
8/14	94	89	80	75	79	69	86	90	76	86	93	82
8/15	94	96	84	80	86	71	91	92	80	88	93	86
8/16	96	97	85	84	90	74	92	93	85	90	94	89
8/17	98	98	87	89	93	77	94	93	89	92	95	91
8/18	98	98	92	92	94	81	97	95	92	93	95	93
8/19	99	99	94	96	95	85	99	96	95	94	96	95
8/20	99	99	95	98	96	90	99	98	97	95	98	97
8/21	100	100	97	98	97	94	100	99	98	97	100	98
8/22	100	100	99	99	99	97	100	100	99	99	100	99
8/23	100	100	100	100	100	100	100	100	100	100	100	100

Note: The boxes represent the central 50% of the run and the shaded cells represent the median passage date of the run.

## **APPENDIX G**

## **ESCAPEMENT**

Appendix G1.—Chinook salmon aerial survey and weir escapement counts in Kuskokwim River spawning tributaries, 1980–2010.

Year	Eek	Kwethluk	Kisaralik	Tuluksak	Aniak	Kipchuk	Salmon						Salmon					
	Aerial	Aerial	Weir	Aerial	Aerial	(Aniak)	(Aniak)	Holokuk	Oskawalik	George	Holitna	Kogrulkuk	Gagarayah	Cheeneetnuk	Tatlawiksuk	Takotna	(Pitka)	
							Aerial	Aerial	Aerial	Weir	Aerial	Weir	Aerial	Aerial	Weir	Weir	Aerial	
1980	2,378				1,035				1,186								1,450	
1981		2,034		672		9,074							16,655				1,439	
1982		471		81				42			521		10,993				413	
1983	188				202	1,909		231	33		1,069		3,009				572	
1984													4,928				545	
1985	1,118	51		63	142				135				4,619				620	
1986						424		336	100			650	5,038					
1987	1,739						193	516	210	193				205				
1988	2,255			869	188	954		244		80			8,505				473	
1989	1,042	610		152		2,109	994	631					11,940				452	
1990				631	200	1,255	537	596	157	113			10,218					
1991	1,312			217	358	697	1,564	885	583				7,850					
1992			9,675			1,083	2,284	670	335	64	91	2,022	6,755	328	1,050		2,536	
1993						2,218	2,687	1,248	1,082	114	103	1,573	12,332	419	678		1,010	
1994				1,243		2,917		1,520	1,218				15,227	807	1,206		1,010	
1995				1,243			3,171	1,215	1,446	181	326	1,887	20,630	1,193	1,565		1,911	
1996		7,415						985	85		7,716		14,199				422	
1997		10,395					2,187	855	980	165	1,470	7,823	2,093	13,286	345		1,161	
1998	522	126		457			1,930	443	557				12,107					
1999									18	98	3,548		5,570			1,490		
2000		3,547					714	182	238	42		2,960	301	3,310		817	345	
2001					997				598		186	3,309	1,130	9,298	143	2,010	721	
2002		1,795	8,502	1,727	1,346		1,615	1,236	186	295	2,444	1,578	10,104	452		2,237	316	
2003	1,236	2,628	14,474	654	94	1,064	3,514	1,493	1,242	528	844	4,693	11,771	1,095	810	1,683	378	
2004	4,653	6,801	28,605	6,913	1,196	1,475	5,569	1,868	2,177	539	293	5,207	4,842	19,503	670	918	2,833	
2005		5,059	4,112	672	2,653		1,944	4,097	510	582	3,845	2,795	21,993	788	1,155	2,918	499	
2006		17,619	4,734		1,044	5,639	1,618		705	386	4,357	3,924	19,414	531	1,015	1,700	539	
2007		13,267	1,373	173	374	3,984	2,147	1,458	146		4,883		13,029	1,035		2,061	418	
2008	487	5,312	1,493		665	3,222	1,061	589	190	213	2,698	832	9,730	177	290	1,071	413	
2009		5,710			404				565	378	3,663		9,702	303	323	1,071	311	
2010 <sup>a</sup>		1,669		235		201			229		1,500	587	5,690		567	178		
10-year Average (2000-2009)	2,945	3,354	12,130	3,001	534	1,114	3,774	1,491	1,454	379	397	3,806	2,200	12,785	577	752	1,840	440
SEG <sup>b</sup>		580-	6,000-	400-	1,000-	-		1,200			330-		3,100-	970-	5,300-	300-830	340-1,300	470-
		1,800	11,000	1,200	2,100	2,300		1,200					7,900	2,100	14,000		1,600	

Note: Blank fields indicate no data.

<sup>a</sup> 2010 weir escapement data are preliminary and subject to revision.

<sup>b</sup> Formally established SEG.

Appendix G2.—Kuskokwim River sockeye salmon escapement estimates, 1976–2010.

Year	Kwethluk Weir	Tuluksak Weir	George Weir	Kogrukluuk Weir	Tatlawiksuk Weir	Takotna Weir
1976				2,326		
1977				1,637		
1978				1,670		
1979				2,628		
1980				a		
1981				18,066		
1982				17,297		
1983				1,176		
1984				4,133		
1985				4,359		
1986				4,244		
1987				a		
1988				4,397		
1989				5,811		
1990				8,406		
1991		697		16,455		
1992	1,316	1,083		7,540		
1993		2,218		29,358		
1994		2,917		14,192		
1995				10,996		a
1996	1,801		a	15,385		0
1997	1,374		445	13,078		0
1998	a		a	16,773	a	a
1999	a		a	5,864	6	a
2000	358		22	2,867	0	4
2001	a	997	24	8,773	3	1
2002	272	1,346	17	4,050	1	1
2003	2,928	1,064	11	9,138	a	3
2004	3,302	1,479	174	6,671	10	18
2005	a	2,663	270	37,960	77	35
2006	6,732	985	164	60,807	41	60
2007	5,262	352	74	16,525	27	14
2008	2,451	185	94	19,675	39	13
2009	4,385	708	54	23,843	39	4
2010 <sup>b</sup>	4,238	437	115	13,995	85	8
10-year Average (2000-2009)	3,211	1,087	90	19,031	26	15
				4,400-		
SEG				17,000 <sup>c</sup>		

<sup>a</sup> Field operations incomplete; annual escapement was not determined.

<sup>b</sup> 2010 weir escapements are preliminary and subject to revision.

<sup>c</sup> Formally established SEG.

Appendix G3.—Kuskokwim River chum salmon escapement estimates, 1976–2010.

Year	Kwethluk Weir	Tuluksak Weir	Aniak Sonar <sup>a</sup>	Kogrukluik Weir	George Weir	Tatlawiksuk Weir	Takotna Weir
1976				8,177			
1977				19,443			
1978				48,125			
1979				18,198			
1980			1,600,032		b		
1981			649,849	57,365			
1982			529,758	64,063			
1983			166,452	9,407			
1984			317,688	41,484			
1985			273,306	15,005			
1986			219,770	14,693			
1987			204,834		b		
1988			485,077	39,540			
1989			295,993	39,549			
1990			246,813	26,765			
1991		7,675	366,687	24,188			
1992	30,595	11,183	87,467	34,105			
1993		13,804	15,278	31,899			
1994		15,724	474,356	46,635			
1995				31,265			b
1996	26,049		402,195	48,495	19,393		2,872
1997	10,659		289,654	7,958	5,907		1,779
1998	b		351,792	36,442		b	b
1999	b		214,429	13,820	11,552	9,599	b
2000	11,691		177,384	11,491	3,492	7,044	1,254
2001	b	19,321	408,830	30,569	11,601	23,718	5,414
2002	35,854	9,958	472,346	51,570	6,543	24,542	4,377
2003	41,812	11,724	477,544	23,413	33,666		3,393
2004	38,646	11,796	672,931	24,201	14,409	21,245	1,630
2005	b	35,696	1,151,505	197,723	14,828	55,720	6,467
2006	47,490	25,648	1,108,626	180,594	41,467	32,301	12,598
2007	57,230	17,286	699,178	49,505	55,842	83,246	8,900
2008	20,048	12,518	427,911	44,978	29,978	30,896	5,691
2009	32,028	13,658	479,499	83,711	7,941	19,975	2,464
2010 <sup>c</sup>	19,233	13,042	429,643	63,583	26,154	36,701	4,062
10-year Average (2000-2009)	35,600	17,512	607,575	69,776	21,977	33,187	5,219
SEG			220,000- 480,000	15,000- 49,000			

<sup>a</sup> Sonar counts are unapportioned and considered to consist primarily of chum salmon.

<sup>b</sup> Field operations incomplete; annual escapement was not determined.

<sup>c</sup> 2010 weir escapements are preliminary and subject to revision.

Appendix G4.—Kuskokwim River coho salmon escapement estimates, 1981–2010.

Year	Kwethluk Weir	Tuluksak Weir	George Weir	Kogrukluuk Weir	Tatlawiksuk Weir	Takotna Weir
1981				11,455		
1982				37,796		
1983				8,538		
1984				27,595		
1985				16,441		
1986				22,506		
1987				22,821		
1988				13,512		
1989				a		
1990				6,132		
1991		4,651		9,964		
1992	45,605	7,501		26,057		
1993		8,328		20,517		
1994		7,952		34,695		
1995				27,861		a
1996			a	50,555		a
1997			9,210	12,237		a
1998	a		a	24,348	a	a
1999	a		8,914	12,609	3,455	a
2000	25,610		11,262	33,135	0	3,957
2001	21,596	23,768	14,398	19,387	10,539	2,606
2002	23,298	11,487	6,759	14,516	11,345	3,984
2003	107,789	39,627	31,925	74,754	a	7,171
2004	64,216	20,336	12,522	26,993	16,410	3,207
2005	a	11,324	8,187	24,113	7,495	2,216
2006	25,664	5,438	11,296	17,011	9,453 <sup>a</sup>	5,548
2007	19,473	2,807	29,317	27,033	8,685	2,853
2008	49,973	7,457	21,931	29,661	11,065	2,817
2009	21,911	8,137	12,464	23,009	10,148	2,701
2010 <sup>b</sup>	a	1,216	12,961	13,971	2,630	3,217
10-year Average (2000-2009)	39,948	14,487	16,006	28,961	9,460	3,706
SEG	<19,000 <sup>c</sup>			13,000- 28,000		

<sup>a</sup> Field operations incomplete; annual escapement was not determined.

<sup>b</sup> 2010 weir escapements are preliminary and subject to revision.

<sup>c</sup> Formally established SEG.